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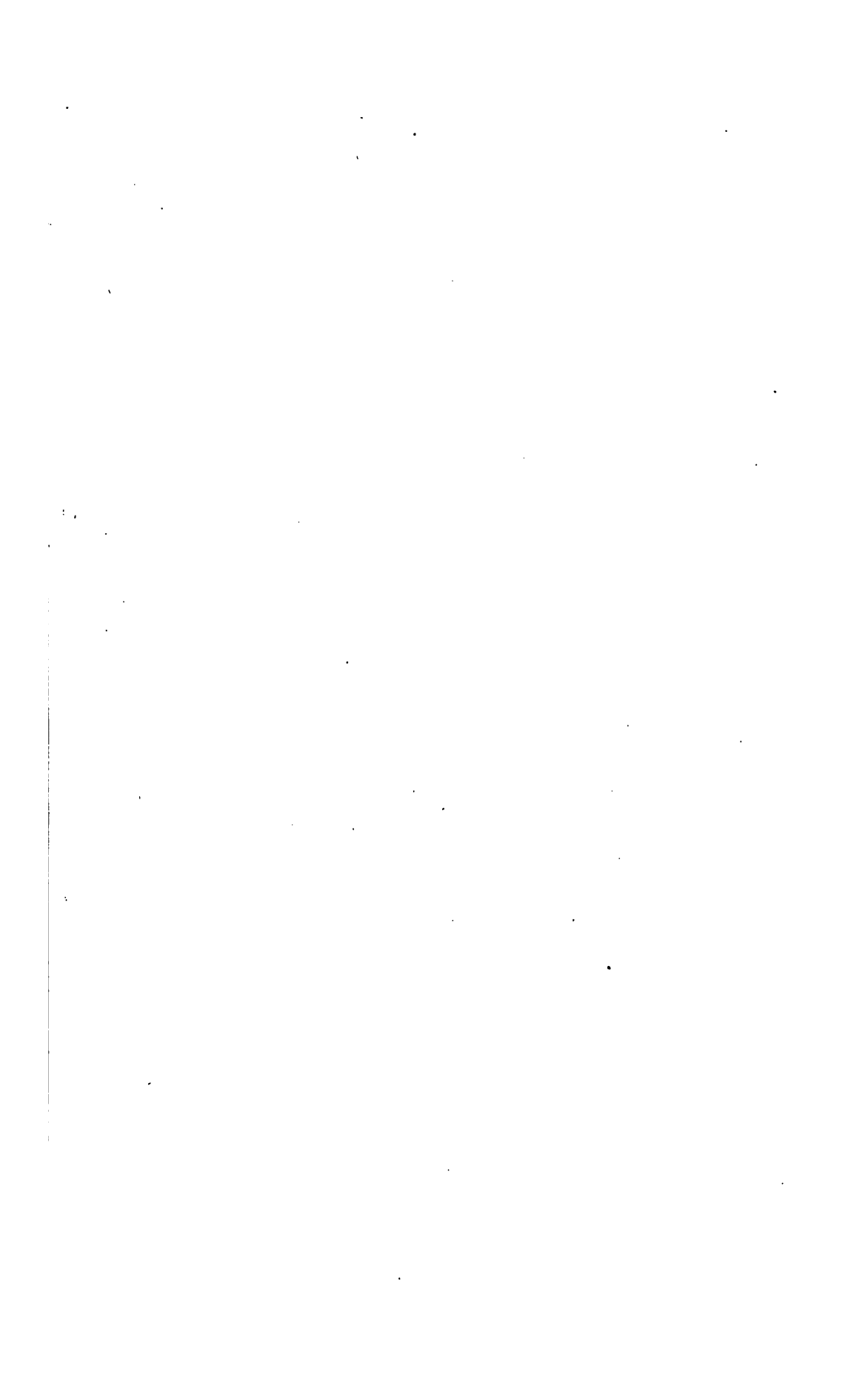


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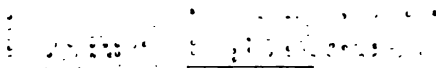


A HANDBOOK  
OF  
GENITO-URINARY SURGERY  
AND  
VENEREAL DISEASES.

BY

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Illustrated with half-tone cuts and special drawings by

L. CRUSIUS, M.D.

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1898.

Figure 1 consists of two scatter plots side-by-side. The left plot is labeled '1980 Census' and the right plot is labeled '1990 Census'. Both plots have 'Number of children in the household' on the x-axis and 'Number of children in the family' on the y-axis. The x-axis ranges from 0 to 10, and the y-axis ranges from 0 to 10. In the 1980 Census plot, there are approximately 15 data points, mostly clustered between 1 and 5 children in the household and 1 and 5 children in the family. In the 1990 Census plot, there are approximately 15 data points, mostly clustered between 1 and 5 children in the household and 1 and 5 children in the family, but with a steeper slope than the 1980 Census plot.

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## PREFACE.

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THIS treatise, devoted to Genito-Urinary Surgery and Venereal Diseases, is ventured in appreciation of the needs of the Medical Practitioner and those Students of Medicine who feel themselves unable, on account of the cost, or unwilling, on account of time, to devote themselves to the larger and more exhaustive works upon such matters.

The brevity of such a work must of necessity preclude the discussion of those subjects now undergoing adjustment at the hands of the profession.

Therefore, the author (notwithstanding his indebtedness to Genito-Urinary workers generally, and his keen sense of appreciation of the views of others), for the most part, offers to his readers that which in his judgment seems best.

To be practical, and present all matters in their most comprehensive manner, has been aimed.

The illustrations here produced are new, many being hand drawings by the celebrated histologist and artist, L. Crusius, M.D., (deceased). Such subjects have been selected for representation with that character of execution as best elucidate the text.

It may appear that undue attention has been given the Anatomy and Physiology of these areas, the explanation being, that a correct and thorough understanding of such subjects cannot be had without this information. The author acknowledges his indebtedness to the firm of Blee-Moore Instrument Co., of this city, for the many cuts of instruments placed at his disposal; also the publishers, for hurrying the copy on to completion.



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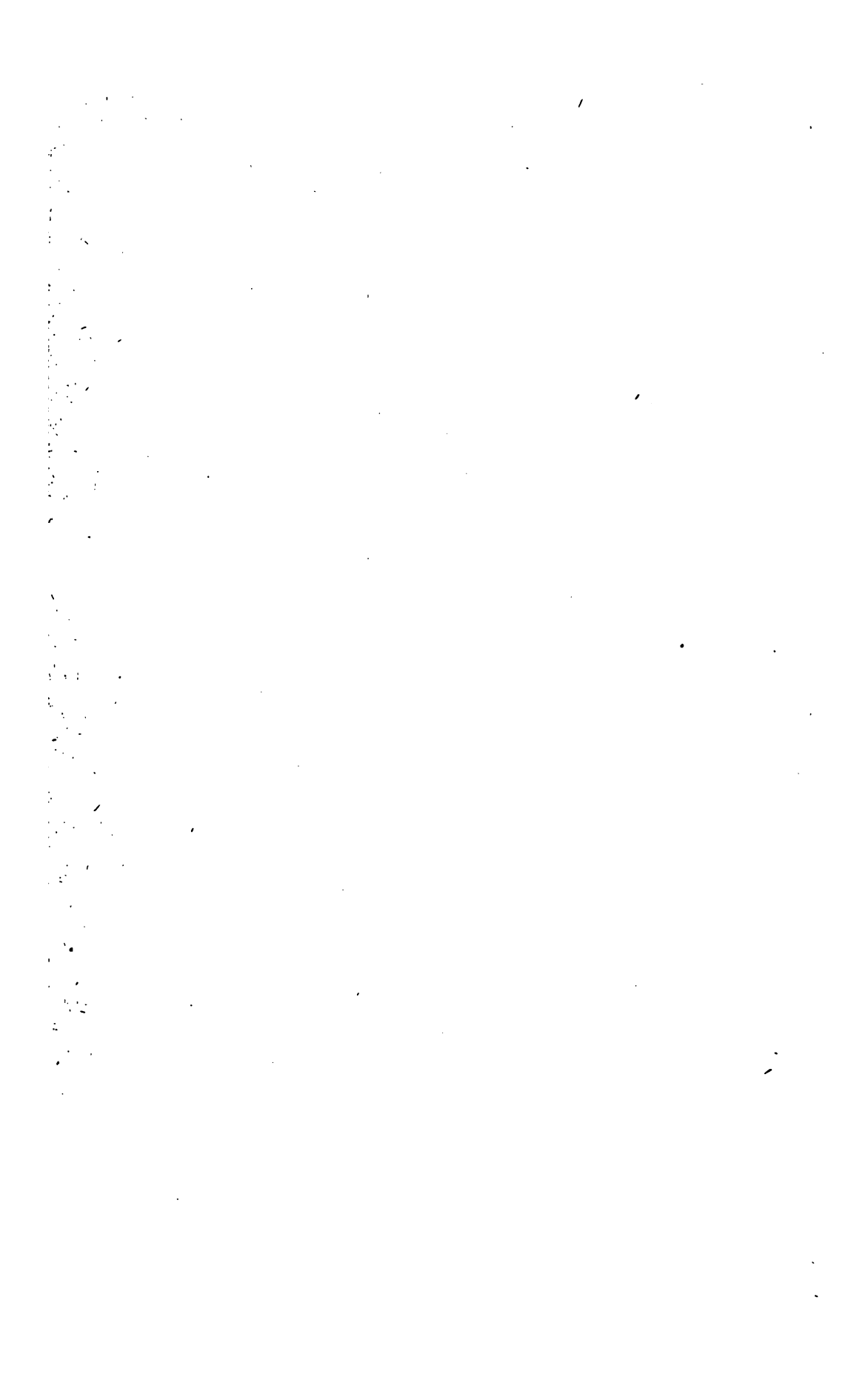
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# GENITO-URINARY SURGERY

AND

## VENEREAL DISEASES.

---

### CHAPTER I.

#### ANATOMY AND PHYSIOLOGY OF THE GENITO-URINARY SYSTEM.

The male organs of Generation are :

- 1st. The Penis in all its parts.
- 2nd. The Prostate Gland.
- 3rd. The Testes with their appendages.

The Urinary organs are :

- 1st. The Urethra.
- 2nd. The Bladder.
- 3rd. The Ureters.
- 4th. The Kidneys.

The Genito-Urinary system then embraces all of the above named parts. (Fig. 1.)

#### THE PENIS

Is the male procreating organ, with a convenient but secondary urinary function; its length and circumference, when flaccid, measure about three inches; when erect, about double; great variations in size are

met; the relationship that organs usually bear to physical development at times is lost, for it is by no means

FIG. 1.



Genito-Urinary Dissection, by D. A. Pelton, M.D., winning the Phillips Gold Medal, 1897.

unusual to see an individual of extraordinary size with an insignificant penis, or the opposite. This member

is made up of a body (Plate 2, Fig. 1, Nos. 8 and 9), a root (Plate 2, Fig. 2, No. 9), and an anterior extremity, the glans-penis (Plate 2, Fig. 1, No. 11); it essentially consists of three bodies composed of erectile tissue, arranged to resemble the double barrels of a gun with ram-rod in place. (See Fig. 3.) Conspicuous in the volume of the penis are the two Corpora Cavernosa (Plate 2, Fig. 1, No. 9), arising by horn-shaped extremities, attached to the rami of the pubes and anterior surface of the respective tuberosities of the ischii; their posterior fourths thus separated approach each other, making the anterior three-fourths intimately related; interposed is an incomplete fibro-elastic septum perforated liberally to admit of vascular communication, thereby insuring equal admission of blood, rendering erection of the organ symmetrical. The anterior termination of these bodies is in a blunt conical extremity, upon which rests the glans-penis.

#### **The Corpus Spongiosum**

(Plate 2, Fig. 1, No. 8) is smaller than the corpora cavernosa; it occupies the under sulcus made by the apposition of these two bodies; it has its posterior beginning in a dilated or bulbous portion situated at the angle made by the convergent corpora cavernosa; this part is in relation with the anterior layers of the triangular ligament. The central portion of the corpus spongiosum is tunneled by the urethra; its anterior termination is the glans-penis.

#### **The Glans-Penis, or the Head of the Penis**

(Plate 2, Fig. 1, No. 11), resting upon the anterior conical extremities of the corpora cavernosa, as we have seen, resembles in shape an acorn flattened from



## PLATE 2.

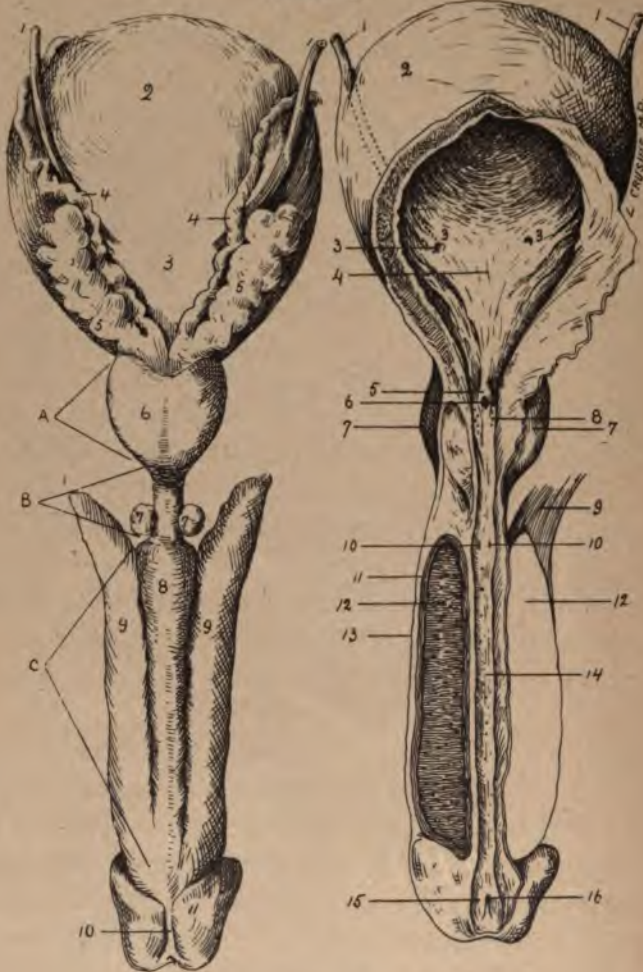


FIG. 1.

Drawn for and under the direction of the author.

FIGURE 1.

- No. 1. Ureters.
- No. 2. Fundus of Bladder.
- No. 3. Base of Bladder.
- No. 4. Vas Deferens.
- No. 5. Seminal Vesicles.
- No. 6. Prostate Gland.
- No. 7. Cowper's Glands.
- No. 8. Bulbous Portion of Spongy Urethra.
- No. 9. Corpora Cavernosa.
- No. 10. Frænum Præputii.
- No. 11. Glans-Penis.
- No. A. Prostatic Urethra.
- No. B. Membranous Urethra.
- No. C. Spongy Urethra.

FIG. 2.

FIGURE 2.

- No. 1. Ureters.
- No. 2. Fundus of Bladder.
- No. 3. Uretral Openings.
- No. 4. Trigonum Vesicæ.
- No. 5. Venu Montanum.
- No. 6. Sinus Poecularis.
- No. 7. Prostate Gland.
- No. 8. Prostatic Sinuses.
- No. 9. Crus of Corpus Cavernosum.
- No. 10. Duets of Cowper's Glands.
- No. 11. Fibrous Fascia.
- No. 12. Corpus Cavernosum.
- No. 13. Integument.
- No. 14. Urethral Follicles.
- No. 15. Fossa Navicularis.
- No. 16. Lacuna Magna.

below. Upon the under surface of the apex appears a slit-like opening called the Meatus Urinarius. The posterior raised border (as shown in Plate 2, Fig. 2) is called the Corona Glandis, and that constricted portion immediately behind the corona is called the Neck.

The glans-penis is covered with a semi-mucous membrane in which abound nerves of sexual excitability; also those glands, called *Glandulæ Odoriferæ*, or the Sebaceous Glands of Tyson, whose function it is to secrete that offensive cheesy material usually observed upon the person of the uncleanly; the epithelium here found is quite fine.

These three bodies are enveloped individually with a fibro-elastic covering of great strength (Fig. 3, Nos. 3 and 8), and further surrounded by a common covering of like kind, called Buck's Fascia. This latter arises by a triangular bundle of fibres from the linea alba and symphysis pubis, which part is called the Suspensory Ligament of the penis. This tissue spreads over the corpora cavernosa, even to covering their anterior extremities, where it divides into halves, which pass backward, covering the corpus spongiosum and blending with the deep layers of the superficial fascia of the perineum. This fascia is of considerable import, in that it limits infiltrated urine and protects the deeper structures of the penis against invasion of local infectious agents. Upon this fascia is found a loose connective tissue without fat, and over this the skin, which differs from skin elsewhere by taking on a pigment at the approach of puberty; the under surface of the skin here is marked by a raphe, continuous with that of the scrotum and perineum; the anterior prolongation of this skin, covering partially or completely the glans-penis, is lined with semi-mucous membrane,

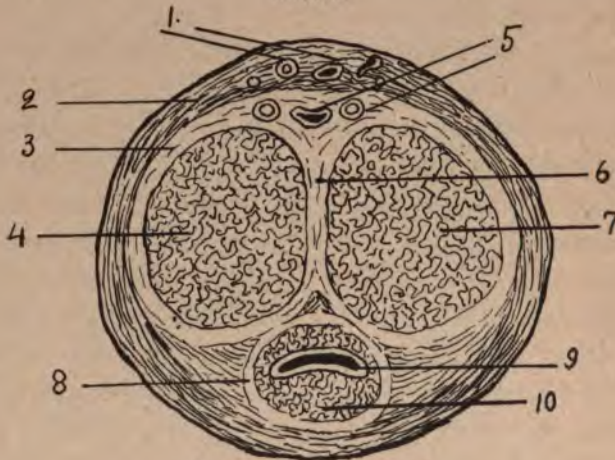


and is called the Prepuce; attached to the inferior angle of the meatus urinarius, passing downward, backward and blending with the lower inner surface of the prepuce is a fold of mucous membrane, dense and elastic, called the Frænum Præputii. (Plate 2, Fig. 1, No. 10.)

#### The Arteries

(Fig. 3, No. 5) of the penis are branches of the internal pudics, one going to the bulb of the urethra, one each to the corpora cavernosa, and branches

FIG. 3.



Cross Section of Penis.

Drawn for and under the Direction of the Author by Dr. L. Crælius.

- |  |  |
|--|--|
| No. 1. Superficial Vessels and Nerves. | No. 7. Corpus Cavernosum.                  |
| No. 2. Skin and Fascia.                | No. 8. Fibrous Tunic of Corpus Spongiosum. |
| No. 3. Fibrous Tunic.                  | No. 9. Urethra.                            |
| No. 4. Corpus Cavernosum.              | No. 10. Corpus Spongiosum.                 |
| No. 5. Deep Vessels.                   |  |
| No. 6. Fibrous Septum.                 |  |

respectively to the glans-penis, prepuce and skin. The plexus of veins here found return the blood into the dorsal, thence into the prostatic plexus and pudendal veins. The nerves are derived from the internal pudics, with sympathetic branches, from the

hypogastric plexus. The lymphatic vessels are abundant and arranged in a superficial group communicating with the lymphatic glands situated along and above Poupart's ligament, and a deep group terminating in the pelvic lymphatic glands.

#### The Urethra

(Plate 2, Fig. 2) is a collapsed canal when not in use, limited in front by the meatus urinarius, and behind by the neck of the bladder; its length is from seven and one-half to nine inches; it is not of uniform calibre, but presents points of physiologic deviation; its average diameter, however, is slightly in excess of three-tenths of an inch.

When the penis is erect, it offers but a single curve; when flaccid, a double curve is presented. That portion of the urethra contained within the substance of the corpus spongiosum is called the Spongy or Pendulous Urethra (Plate 2, Fig. 1, C); it is distinctly the longest portion, measuring about five and one-half to six and one-half inches, the anterior portion of which presents a pouched or dilated appearance, which cavity, from its resemblance to a boat, is called the Fossa Navicularis. (Plate 2, Fig. 2, No. 15.) Situated within this space are numerous openings of mucous ducts, pointing anteriorly, especially the large and important one known as the Lacuna Magna (Plate 2, Fig. 2, No. 16); throughout the urethra, principally upon its roof, are found many blind pouches opening anteriorly, called the Sinuses of Morgagni (Plate 2, Fig. 2, No. 14), their length being something like half an inch, and of a size sufficient to engage the point of a filiform bougie.

The first two points of physiologic narrowing of the

urethra are contained within this division, the meatus urinarius, and a point posterior to the fossa navicularis; found in this division also are the first spaces of physiologic enlargement of the canal, the fossa navicularis and its posterior termination, the bulb of the corpus spongiosum; opening into this latter dilatation are the ducts of Cowper's glands (Plate 2, Fig. 2, No. 10), these glands being two bodies the size and shape of a pea, situated immediately behind the bulb (Plate 2, Fig. 1, No. 7), their office being the secretion of a diluent for the spermatic fluid.

Here is found the Triangular Ligament, a dense fibrous fascia attached to the pubis and the rami ischii, completely bounding this space, except the aperture for the urethra, blood vessels and nerves. Beginning at the posterior portion of the spongy or bulbous urethra and proceeding backward and slightly upward for three-quarters of an inch, we traverse that portion of the urethra called the Membranous. (Plate 2, Fig. 1, B.) Here is the third point of physiologic narrowing; here, too, is found the voluntary muscular fibres called the Compressor Urethræ Muscles; it is the action of these muscles that enables the individual to conclude the act of micturition at will; on account of spasm of this muscle instruments are arrested in their passage to the bladder, which condition is called False Stricture. It is the presence of this muscle that prevents injections from being thrown into the bladder.

Paralysis here is attended with urinary leakage. The posterior limit of this second division of the urethra is in relation to the apex of the prostate gland, which point is also the beginning of the third part of the urethra, called Prostatic Urethra (Plate 2, Fig. 1, A), and includes the last one and one-fourth inches of



the canal, all of which portion is surrounded by the prostate gland; the greater portion of the prostate, however, being below the urethra. This portion of the urethra is spindle-shape, spacious and dilat-able; within its confines are to be found many important structures. A longitudinal, narrow and distinct ridge of musculo-erectile tissue upon its floor is called the *Caputgallinaginis* or *Veru Montanum* (Plate 2, Fig. 2, No. 5); upon either side of this ridge is a depression, upon the floor of which are situated the several openings of the ducts leading from the prostate gland, called the *Prostatic Ducts*. (Plate 2, Fig. 2, No. 8.) The *Ejaculatory Ducts* have their mouths in a fossa here called the *Sinus Pocularis* (Plate 2, Fig. 2, No. 6), which latter is almost one-fourth of an inch in length, being upon the floor and beneath the middle portion of the prostate.

The urethra is composed of three coats: A mucous or lining coat continuous in front with the semi-mucous membrane of the glans-penis and the prepuce, blending behind with the lining tissues of the urinary and genital organs; it offers lodgment for numerous mucous glands within its sub-mucous substance, presenting openings therefor upon the surface; it is covered with columnar epithelium, except the anterior extremity, where squamous is found. Beneath the mucous portion of the urethra is the muscular layer, composed internally of circular, and externally of longitudinal fibres, which order of arrangement is maintained throughout the entire spongy urethra, except at the bulb, where the longitudinal fibres leave the circular to encircle the spongy portion beneath the fibrous fascia, joining the circular again at the meatus. Both sets of muscular fibres are continuous with the corresponding parts of the bladder.

In addition to the mucous and muscular layers of the urethra, there is a thin layer of erectile tissue, arranged about the membranous and prostatic portions, which latter blends with the corpus spongiosum.

The function of the urethra is double; it affords an exit for both the urine and spermatic fluid.

The next organ of generation is the Prostate Gland (Plate 2, Fig. 1, No. 6); it is a musculo-glandular organ, measuring one and one-half by one and one-fourth inches by three-fourths of an inch in its three diameters, being broader than long and longer than deep; it weighs normally about six drachms; it is within the pelvis, embracing the neck of the bladder, and the last one and one-fourth inches of the urethra; it is placed behind the deep perineal fascia below and posterior to the symphysis pubis, in close relationship with the rectum. Its shape resembles a horse-chestnut; it is composed of only two lateral lobes rather firmly united. In structure it is distinctly muscular (of unstriped kind), though it possesses numerous glands, opening by rather long ducts, which communicate with each other, forming fifteen to twenty excretory ducts, ending upon the floor of the prostatic urethra. The two lateral lobes are securely enveloped within a capsule of fibrous tissue, all held in place by the posterior layers of the deep perineal fascia, the pubo-prostatic ligaments and a reflection anteriorly of the levator ani muscle. The office of this body is, by its muscular nature, to contract upon the spermatic fluid within this portion of the urethra, causing its spasmodic expulsion during ejaculation, while its glandular feature affords a thin bluish mucus that mingles with the spermatic fluid, diluting it and adding life, giving properties to the spermatozoa. The gland is penetrated or tunneled



by the ducts from the seminal vesicles in its upper portion.

The arteries of this body are branches of the middle hemorrhoidal and the inferior vesical; the veins empty into neighboring vessels about the parts, the lymphatics communicate with the pelvic glands, while the nerves are derived from the hypogastric plexus.

Normally this body does not attain its development prior to puberty, and it is usual to note hypertrophy in advanced age; earthy concretions are frequently found within its substance.

#### **The Seminal Vesicles**

(Plate 2, Fig. 1, No. 5) are two irregularly lobulated pear-shaped containers, measuring from two to five inches long, five to six lines broad, and about half as deep; they are placed at the base of the bladder above the prostate and near the urethral entrance; they serve as reservoirs for the product of the testes, adding thereto their own secretion as a diluent and preservative; their relation with each other is V-shaped; their anterior extremities unite with the vasa deferentia, forming for each an ejaculatory duct, which penetrates the upper portion of the prostate, terminating in a vertical slit upon the floor of the prostatic urethra. These bodies may be readily detected with the index finger in the rectum above the prostate, and their contents expressed by proper manipulation. One substantial ejaculation should be the capacity of these vesicles.

#### **The Vas Deferens**

(Plate 2, Fig. 1, No. 4) is that canal or duct having its superior or remote beginning at its junction with the duct of the seminal vesicle, forming, as it does, the ejacu-



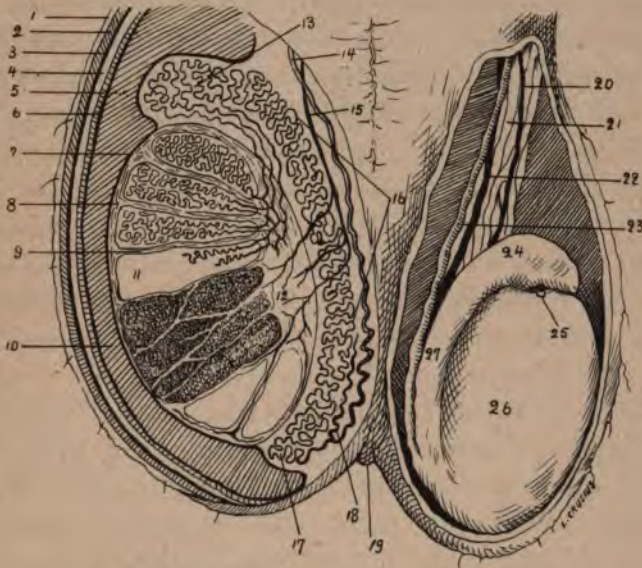
latory duct; it is about two feet in length, with a thickness of one and one-fourth lines, its office being the transmission of the testicular secretion to its respective vesicle; their walls are firm, elastic and tough, conveying to the sense of touch a cord-like hardness. Near its union with the duct of its seminal vesicle and the prostatic base the vas is somewhat narrowed; it courses upward; to the inner side of its seminal vesicle, near the entrance of the ureter, it curves about the epigastric artery and passes external to the external iliac; it courses onward through the internal abdominal ring, down the inguinal canal into the scrotum, occupying a posterior position in the spermatic cord, becoming continuous with the lower and smaller portion of the epididymis, where it is called the Globus Minor.

#### The Epididymis

(Fig. 4, Nos. 16 and 27) is that body occupying a position upon the posterior and upper aspect of the testicle; it is but a continuation of the vas deferens, being a bundle of smaller and much convoluted tubes; as shown (Fig. 4, No. 17) it measures in length, when teased out, about twenty feet; it is formed by the convergence of a system of tubes or ducts known as the Coni Vasculosi (Fig. 4); it presents two heads, the larger at its upper extremity called the Globus Major (Fig. 4, Nos. 13 and 24), the smaller at its lower termination called the Globus Minor, and a body which is that portion between these two heads (Fig. 4, Nos. 16 and 27). The Globus Major, as before stated, is formed from a series of efferent ducts (the coni vasculosi), while the Globus Minor, rather enlarged, is attached to the testicle by a fibrous band and some loose areolar tissue. The body or central portion con-

sists of a series of convolutions of the tube loosely bound by areolar tissues. Found here also is a blind tube from one to three inches long, related to the cord

FIG. 4.



Drawn for and under the direction of the Author.

- |  |                                     |
|--|-------------------------------------|
| No. 1. Skin.                               | No. 15. Spermatic Artery.           |
| No. 2. Dartos.                             | No. 16. Body of the Epididymis.     |
| No. 3. External Spermatic Fascia.          | No. 17. Globus Minor.               |
| No. 4. Cremasteric Fascia.                 | No. 18. Vas Aberens.                |
| No. 5. Infundibuliform Fascia.             | No. 19. Median Raphe.               |
| No. 6. Parietal Layer of Tunica Vaginalis. | No. 20. Spermatic Artery.           |
| No. 7. Visceral Layer of Tunica Vaginalis. | No. 21. Plexus of Veins.            |
| No. 8. Tunica Albuginea.                   | No. 22. Artery of the Vas Deferens. |
| No. 9. Septum.                             | No. 23. Vas Deferens.               |
| No. 10. Cavity of Tunica Varginalis.       | No. 24. Globus Major.               |
| No. 11. Lobule.                            | No. 25. Hydatid of Morgagni.        |
| No. 12. Mediastinum.                       | No. 26. Testicle.                   |
| No. 13. Globus Major.                      | No. 27. Epididymis.                 |
| No. 14. Vas Deferens.                      |                                     |

usually connected with the lower head of the epididymis, called the Vas Aberrans (Fig. 4, No. 18). The remains of the duct of Müller are small bodies attached

to the epididymis, and occasionally to the testis by minute pedicles, which have been termed the Hydatids of Morgagni (Fig. 4, No. 25).

#### The Testes

(Fig. 4) are two egg-shaped glands, measuring one and one-half to two inches by one and one-quarter by one inch in their diameters, and weigh slightly less than an ounce, the left being somewhat larger than the right. To these organs belong the office of secreting the spermatic fluid, hence they are the real procreating glands of the male; they are each suspended in the scrotum by their spermatic cord, made up of the spermatic artery and vein, the vas deferens, nerves and lymphatics, all bound together by loose areolar tissue.

The testicles are developed and remain during the greater part of intra-uterine life within the abdominal cavity; about the time of birth they descend into the scrotum. They are each covered by the skin and dartos (a contractile tissue), the latter forming two distinct compartments for either testis; they are more intimately covered by the inter Columnar Fascia, Cremaster Muscle, Infundibuliform Fascia, Tunica Vaginalis, and Tunica Albuginea (Fig. 4). The two coverings that are of especial interest are the Tunica Vaginalis and the Tunica Albuginea. The first is a process of peritoneum brought into this situation by the descent of the testis, and afterward being shut off from the general peritoneal cavity it forms an incomplete covering for the testicle; it is also reflected over the epididymis. Occasionally the communication between the general peritoneal cavity and the cavity of the tunica vaginalis continues, in which event it is

usual to find this cavity taken by gut, omentum or serous fluid, forming, respectively, congenital hernia, epiplocele or hydrocele; immediately under this and directly enveloping the testicle, sending processes into the substance of the organ and dividing it into wedge-shaped compartments, is the dense white inelastic covering (the second of the above-mentioned), known as the Tunica Albuginea (Fig. 4, No. 8). These vertical processes of this material are known as the Mediastinum Testis (Fig. 4, No. 12), which are pierced by blood vessels and contain the seminiferous tubes; radiating processes of connective tissue pass from the mediastinum to the inner surface of the tunica albuginea proper, thus lobulating the substance of the testicles (Fig. 4); the number of such lobules to each organ is 150 to 200, placed with their apices toward the mediastinum and their bases toward the surface. Coursing along the mediastinum, lining the tunica albuginea, and following the processes that dip into the substance of the gland is a plexus of blood vessels and connective tissue called the Pia Mater Testis or Tunica Vasculosa. It is within the cavity of the connective tissue where the spermatozoa are generated; the seminiferous tubes found in these spaces number to each gland about 800. The lobules making up the organ are not of uniform size and shape, the larger containing in some instances five to seven seminiferous tubes, while the smallest occasionally a single tube. These tubes are convoluted, and when teased out are found to measure twenty-five or thirty inches in length with a diameter of  $1/244$  inch. The tube begins by several short, blind extremities, with occasional communicating loops; they pass backward toward the posterior aspect of the testicle, uniting to



make about twenty straight tubes, known as the *Vasa Recta*, which latter pass through the mediastinum, where the tubes form a net-work called the *Rete Testis*; these tubes anastomose and leave the testicle by twelve to twenty openings, called the *Vasa Efferentia*, which in turn are arranged into masses which constitute the *globus major* of the epididymis.

The testicle is attached to the bottom of the scrotum by a cord called the *Gubernaculum Testis*.

#### The Bladder.

Posterior to the urethra is a musculo-membranous viscus, the Urinary Bladder (Plate 2; Figs. 1 and 2, No. 2). In childhood this organ is within the abdomen, but later its position is in relation, anteriorly, with the surface of the pubis, internal obturator muscles and triangular ligament; its posterior surface, covered with peritoneum, is in relation with the rectum. When comfortably filled it will measure about five inches in its longest (vertical diameter), three inches in its transverse diameter, and will hold about fifteen ounces. It offers a summit, body and neck; from either side of the summit arise two musculo-fibrous cords, which are the remains of the obliterated hypogastric arteries of foetal life; attached to the summit also is a ligament of a similar nature, called the *Urachus*, all of which are inserted at the umbilicus.

The body of the bladder is related to the *vasa deferentia* as the latter curves backward upon either side.

The base is in relation with the second portion of the rectum, united therewith by a process of peritoneum, while the neck, directed downward and forward, is continuous with the urethra, and is surrounded by the prostate.

The supports of the bladder, in addition to those mentioned, are the Pubo-Prostatic Ligament to the anterior surface; from the sides a fascia from the respective sides of the prostate; to the posterior aspect are attached two peritoneal folds arising from the respective sides of the rectum, and latterly two like folds. Four coats compose the organ:

1st. A peritoneal covering upon its posterior, this being reflected from the sides to the pelvis and abdominal walls.

2d. A muscular coat constructed of fibres arranged spirally, forming several layers, the superficial being practically longitudinal, while the deep layers are distinctly circular; it is this circular arrangement at the neck that makes the sphincter of the bladder, after which they are prolonged into the prostatic urethra.

3d. Beneath the muscular is the cellular layer of rather loose areolar tissue.

4th. The internal or mucous coat, covered upon its surface with an epithelium composed superficially of polyhedral cells, deeper of club-shaped, and spindle cells.

Mucous follicles are scattered over the inner surface, and many racemose glands are located near the neck.

Viewed from the inner surface of the bladder is seen near the neck a smooth triangular ridge (somewhat paler than the adjacent tissue, and more firmly attached to the deeper layers), extending outward and backward upon either side to the respective uretral openings. This body is called the *Trigonum Vesicæ* (Plate 2, Fig. 2, No. 4), which serves as a conductor of the urine.



Projecting into the opening of the urethra is a small mass of mucous membrane, called the *Uvula Vesicæ*.

The blood supply of the bladder is from the superior, inferior and middle vesical, with branches from the obturator and sciatic arteries.

About the neck, sides and base of the bladder, the veins form a plexus, which empty into the internal iliac.

The lymphatics form, for the most part, companions for the vessels.

#### The Ureters

(Plate 2, Figs. 1 and 2, No. 1) are two cylindrical canalways, the size of a goose-quill, measuring fifteen to eighteen inches in length, connecting the kidneys with the bladder, and acting as conductors of urine. They are constructed of three coats or layers of tissue: an external fibrous, continuous with the capsule of the kidney, and that coat of the bladder, a muscular coat made of longitudinal and circular fibres, and an internal mucous coat presenting several layers of epithelial cells.

The ureters arising from the pelvis of the kidneys pass downward near the abdominal wall, anterior to the iliac arteries, beneath the peritoneum, in relation with the ilium on the right and the sigmoid on the left, entering the bladder obliquely through the posterior false ligament close beside the vas deferens, about one and one-half inches behind and above the prostate. When the bladder is distended the distance between the two urethral orifices is about two inches. On account of the muscular layer, urine reaches the bladder, not solely obeying the law of gravity, but is acted on by the muscles of the ureters. The oblique entrance of these organs make a valve that presides over their bladder termination. (Plate 2, Fig. 2, No. 3.)

### The Kidney

(Fig. 5) is the real urinary organ, for on its account many effete principles of the blood are eliminated from the economy in the form of urine. They are two bean-shaped, glandular bodies, measuring in their three diameters four by two by one inch, and weigh from five to six ounces.

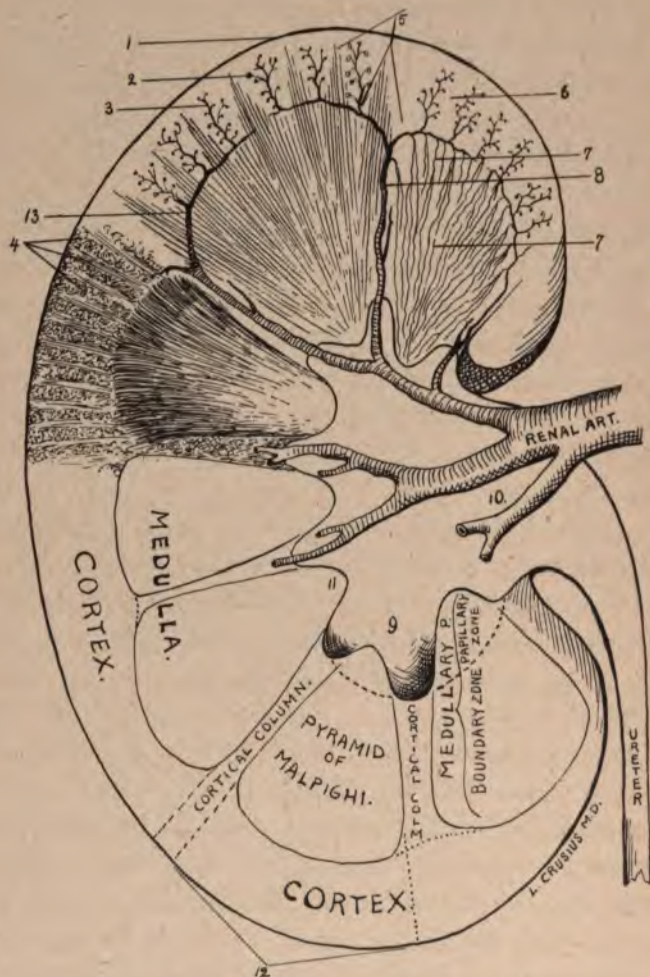
They are placed in the lumbar region, upon either side of the vertebral column. They extend from the eleventh rib to within an inch of the crest of the ilium, the right being slightly lower than the left, perhaps on account of its relation to the liver. They are posterior to the peritoneum, covered by a mass of fat for protection, which, together with their blood vessels, hold the organs in place.

The right kidney is in relation upon its anterior surface to the right lobe of the liver, the ascending colon, and the descending duodenum, while the left is in relation upon its anterior surface to the greater end of the stomach, descending colon, tail of the pancreas and lower part of the spleen. Upon the posterior aspect each rests against the crus of the diaphragm, being separated from the *psoas magnus* and *quadratus lumborum* muscles by the anterior lamellae of the *transversalis aponeurosis*; their upper portions are capped, respectively, by their *Supra Renal Capsules* (bodies whose function is undetermined precisely, though recent research has opened a discussion that bids fair to lead to definite knowledge).

Upon the central border of the kidney is a fissure about an inch in length, called the *Hilum*, which communicates with a cavity called the *Pelvis* (Fig. 5, No. 10); it is here that the *Renal Vein* in front leaves the organ; and the *Renal Artery* (Fig. 5) reaches the



FIG. 5.



Semi-diagrammatic representation of the Kidney.

Drawn for and under the direction of the author by L. Crucius, M.D.

- |                               |   |
|-------------------------------|---|
| No. 1. Capsule of the Kidney. | No. 8. Arteria Propria Renalis.             |
| No. 2. Glomerulus.            | No. 9. Infundibulum.                        |
| No. 3. Interlobular Artery.   | No. 10. Pelvis of the Kidney.               |
| No. 4. Cortical Markings.     | No. 11. Papilla.                            |
| No. 5. Pyramids of Ferrein.   | No. 12. Cortical Arch.                      |
| No. 6. Labyrinth.             | No. 13. Afferent Branch of Arteria Propria. |
| No. 7. Arteriae Rectae.       |   |

organ posterior to the vein, with the ureter placed behind the artery; here also the lymphatics enter, underneath their fatty covering.

The kidneys are enveloped in a close-fitting capsule (smooth and thin) composed of fibro-elastic tissue (Fig. 5, No. 1); at the hilum this tissue is reflected inward to line the pelvis, where it also forms a covering for the blood vessels and calices.

Upon section of the kidneys (Fig. 5), immediately beneath the capsule, is the rather soft, reddish, granular striated substance, about one-sixth of an inch in thickness, called the Parenchymatous Substance or Cortical Layer (Fig. 5, No. 4), from the under surface of which little projections between the pyramids appear, known as the Columns of Bertin.

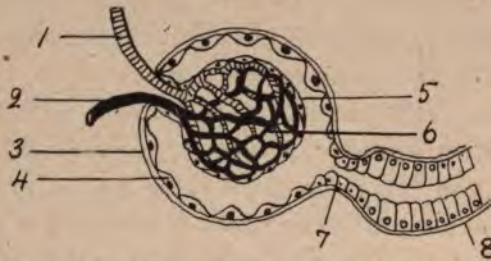
From the arrangement of the superficial vessels the surface of the kidney appears to present a lobulated condition; the organ, however, is not lobulated. In the cortical substance are to be found numerous flask-shaped bodies, which are the dilated extremities of the tubes, giving the granular appearance to this layer. These bodies are known as the Malphigian Bodies or Tufts. (Fig. 6.) The cortical substance offers a fibrous matrix of an intricate and delicate kind, supporting the blood vessels and the secreting organs; the tubes found here are by no means of uniform size and shape—three distinct varieties are met. The tubes connected directly with the Malphigian bodies are much convoluted; the tubes next to the convoluted are smaller; they dip deep into the pyramids, returning again to the cortical portion, forming loops; next, the connecting tubes, forming a plexus between the other tubes with the straight tubes of the pyramids.

The Malphigian bodies, sometimes called the Glomer-



uli (Fig. 6), are small tufts of blood vessels enclosed within a thin membranous covering, called Bowman's Capsule, which is lined with nucleated epithelial cells; these bodies receive an efferent vessel or artery opposite the uriniferous tubule (of which it is the dilated extremity). After entering the body it is at once broken up into a net-work; here the veins are formed which pass out at the same point where the artery enters, leaving the uriniferous tubule to begin at an opposite point. Within this membranous sack, on account of the breaking up of the vessels entering

FIG. 6.



Malpighian Corpusele, or Glomerulus—Semi-diagrammatic.

Drawn for and under the direction of the author.

- |   |                                  |
|---|----------------------------------|
| No. 1. Artery to Malpighian Body.                 | No. 5. Epithelium of the Tuft.   |
| No. 2. Vein Returning Blood from Malpighian Body. | No. 6. Convoluted Blood Vessels. |
| No. 3. Bowman's Capsule.                          | No. 7. Epithelium of the Neck.   |
| No. 4. Epithelium of the Capsule.                 | No. 8. Epithelium of the Tube.   |

the glomerulus, is the liquid element of the urine secreted; together with the urinary salts, while the urea, uric acid and other materials are secreted by the epithelium of the uriniferous tubules. Thus it will be seen that it is in the cortical layer of the kidney where the real office of the organ is performed.

Beneath the cortical zone is the medullary portion (Fig. 7), subdivided into the papillary and boundary layer of Ludwig, the former being nearly white,

distinctly and uniformly striated, while the latter is of a purplish color. The striated portion passing to the apices of the pyramids. The medullary portion of the kidney is made up for the most part of connective tissue and bundles of straight tubes, which become smaller and smaller as they approach the periphery.

In each kidney are found from eight to twelve pyramidal bodies, with their bases directed toward the cortical portion and their apices toward the pelvis, forming the source of the ureter.

From Fig. 7 it will be seen that the tubuli uriniferi, beginning with the Malphigian body in the cortical substance, first presents a convoluted appearance, which first portion is called the Proximal Convoluted Tube. It next becomes spiral as it approaches the medullary substance; as it enters the medullary substance it becomes smaller and rather straight; passing down into the pyramids it turns back, becoming larger and spiral again as it enters the cortical layer; this loop is known as the Looped Tube of Henle, which terminates in an irregular angular fashion; there is a second convoluted portion, called the Distal Convoluted Tube, which becomes narrow, next a Curved Tube, then the Straight or Collecting Tube, ending upon the top of a papilla.

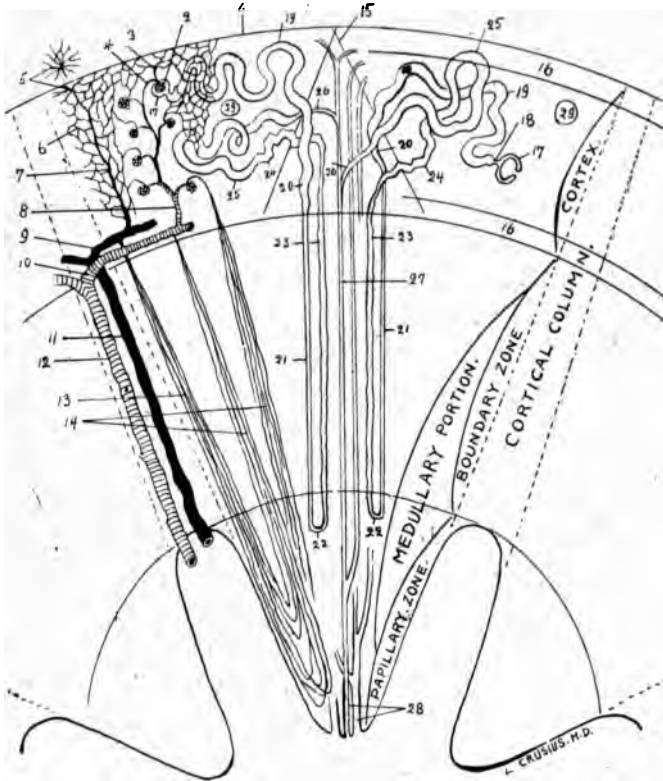
Fig. 7 will afford a very ready understanding of this arrangement.

The epithelium lining the tubes differ in the several portions.

The blood to the kidney is from the aorta through the renal artery, which latter divides external to the hilum into four or five primary branches, which latter continue subdividing, affording two vessels upon the side of each malphigian pyramid, with



FIG. 7.



Semi-diagrammatic Representation of Minute Anatomy of the Kidney.

Drawn for and under the direction of the author.

- |                                 |   |
|---------------------------------|---|
| No. 1. Capsule of the Kidney.   | No. 14. Arteriæ Rectæ.                          |
| No. 2. Glomerulus.              | No. 15. Pyramid of Ferrein, or a Medullary Ray. |
| No. 3. Efferent Vessel.         | No. 16. Sub-Capsular Layer.                     |
| No. 4. Afferent Vessel.         | No. 17. Capsule of Bowman.                      |
| No. 5. Vena Stellata.           | No. 18. Neck of Uriniferous Tubule.             |
| No. 6. Capillaries.             | No. 19. Proximal Convoluted Tube.               |
| No. 7. Interlobular Vein.       | No. 20. Spiral Tube of Schachowa.               |
| No. 8. Interlobular Artery.     | Nos. 21, 22, 23. Loop of Henle.                 |
| No. 9. Veinous Arcade.          | Nos. 24, 25. Distal Convoluted Tube.            |
| No. 10. Arterial Arcade.        | No. 26. Curved Tube.                            |
| No. 11. Vein.                   | Nos. 27, 28. Straight or Collecting Tube.       |
| No. 12. Arteria Propriarenalis. |   |
| No. 13. Venæ Rectæ.             |   |

branches to the malphigian bodies in columns, passing to the bases of the pyramids and cortex, where smaller branches, called the Inter Lobular and Arteriæ Rectæ, are developed.

The venous blood passes out through the hilum, through the renal vein, into the inferior vena cava.

The nerves found in the kidney number about fifteen; they are small, possessed of ganglia, and are derived principally from the solar plexus, semi-lunar ganglia and lesser splanchnic.

## CHAPTER II.

DEFORMITIES OF THE PENIS—TRAUMATIC AFFECTIONS OF THE  
PENIS—CUTANEOUS AFFECTIONS OF THE PENIS—TUMORS OF  
THE PENIS—LYMPHATIC AFFECTIONS OF THE PENIS—  
PHIMOSIS—PARAPHIMOSIS—HERPES PROGENITALIS—  
VENEREAL WARTS—BALANITIS—POSTHITIS—OSSIFI-  
CATION OF THE PENIS—CALCIFICATION OF  
THE PENIS—HYPOSPADIAS—EPISPADIAS  
CIRCUMCISION—AMPUTATION  
OF THE PENIS.

Anomalies of this organ of a more or less pronounced nature exist more abundantly than many believe. The esteem with which the sexual organs are held by man is interesting; irregularities of the parts, especially of the penis, develop in the possessor strange and wonderful fancies; and for reasons of this kind it is often late, and oftener never, that such individuals present themselves to the surgeon for relief. In the processes of evolution the penis may be undeveloped, or it may be excessive in size. When the organ attains a length of nine inches, when flaccid, or when no longer than two inches when erect, it may be said to be deformed. Rarely there is developed two such organs; rarely also is there none. Fig. 8 represents, perhaps, the most interesting specimen that medical literature offers.

In the London "Lancet," January, 1866, we are informed that this monster was a well-developed man presenting a third but imperfect leg, with double foot and penis; that both these latter organs became erect,

and discharged semen at the same time, also that urine would flow from the urethra of either simultaneously and at will.

When no penis is observed, the urine is usually

FIG. 8.



Double Penis.

passed through the rectum ; occasionally the penis presents a twisted appearance ; other defects are observed, some of which will be mentioned later.

The treatment for the above deformities must of course be surgical, and then only when circumstances admit.

### Traumatic Affections.

From the anatomical formation and situation of the penis it is only occasionally the subject of legitimate injury. Contusions are attended, as a rule, with undue extravasation of blood, due to its vascularity and looseness of connective tissue. Such situations are best treated with conservatism; the application of hot or cold compresses, rest, full dose of potass. brom. (40 grains), to prevent erection, and an active cathartic will in most instances accomplish good ends. Incision into such a part should be performed under strict surgical cleanliness, for infection here might be attended with extreme consequences. Active inflammation and suppuration might be followed by gangrene, that would develop a deformity which would lead to painful and imperfect erection. For the most part, however, injuries of this part come as a result of mental derangement and toying with the parts. Many interesting cases are on record where perversion of the sexual dictate has led to mutilation and even destruction of the penis. In the writer's experience several pitiable instances have occurred from such insanity. Those injuries involving the urethra will be treated under the latter heading.

The penis may be fractured under proper circumstances; this could occur when the member is rigidly erect, if forcibly and suddenly flexed. Such a condition should be at once examined, extension made, and an elastic support applied throughout its entire extent, bearing in mind the importance of providing for, and prevention of, erection. An injury of this nature is liable to involve the urethra, when retention of urine, followed by infiltration, and those serious consequences are to be expected. Should this serious complication occur, no



time should be lost in readjusting the urethra and having a catheter reach the bladder. Failing in this it becomes necessary to open the canal in the perineum, which is the most available point for an external opening, and in this way alone obviate the dangers incident to extravasated urine; sounds should be passed regularly, and the treatment for prevention of traumatic stricture adopted. It is well in all such situations to look to the general health, especially the urine, giving some such prescription as—

## No. 1.

R̄.—Acidum benzoicum.....	℥ii.
Ext. hyoscyam. fld.....	℥i.
Ext. stigmata maydis, fld.....	℥ii.
Tr. Cinchon. co.....	℥ii.

M. ft. sol.

S.—A teaspoonful in a wineglassful of water every three or four hours.

Hemorrhage, which, as a rule, is excessive in all injuries of this part, may be controlled by introducing a full size sound and applying a close-fitting bandage. Erections should be controlled. Rx. Nos. 2 and 3 will be of service.

## No. 2.

R̄.—Potassii. brom.....	℥vi.
Camph. mono. brom. gr. xvi.	
M. ft. chart, No. xii.	

S.—One powder in water every three or four hours when necessary to subdue erections.

## No. 3.

R̄.—Hydrat. chloral.....	℥iiss.
Tr. hyoscyam. ....	℥. xxxii.
Aquæ camphoræ ....	℥iv.
M. ft. sol.	

S.—A teaspoonful in water every four to six hours to secure rest and sleep.

The old practice of breaking the chord in chordee during an attack of gonorrhœa is to be condemned.

## Dislocation

of the penis may result when the prepuce becomes engaged in a way as to force the glans-penis backward to



an extent that the semi-mucous membrane at the corona or præputial orifice gives way, permitting the penis proper to be pushed into the scrotum or upon the pubis.

Prompt reposition of the organ is the treatment; reverse the order of the force that was responsible for the accident as nearly as possible. A long tenaculum may be hooked into the glans-penis, traction applied, assisted with manipulation from behind, and the member may be dragged into place. Occasionally the penis seems lost, and nothing short of free opening up of the area will enable its location and correction. Retention of urine here is to be treated as elsewhere; the trocar and canula may be used by cleansing the area and puncturing the bladder in the median line, an inch above the symphysis pubis.

#### **The Cutaneous Affections**

of the penis are those common to other cutaneous surfaces, and demand appropriate treatment; it is possibly more important here to recognize these skin lesions than elsewhere, as upon this part the presence of such disease will often give rise to anxiety, fear and apprehension that is painful. Elephantiasis is common; erysipelas of a phlegmanous type may arise and offer serious results.

#### **Tumors**

may also be found here, which may be malignant or benign; the most frequent of the cancerous type is epithelioma; other forms are rare. To distinguish epithelioma from other affections, reference to table, page 43, should be had. The treatment for epithelioma is surgical and should be radical. It is my custom, prior to general disturbances, when the disease seems local, first, to freely dissect out the growth, then

with a thermo-cautery thoroughly destroy the underlying structures, dressing the wound by packing with iodoform gauze. I watch attentively the outcome of this operation, and upon the first evidence of return I advise amputation of the penis in its entirety, together with the removal of the testes, and the superficial chain of lymphatic glands upon either side. Radical as this may seem, nothing short can be depended upon for permanent relief, and even then relapses frequently occur. Several times I have been induced to apply an escharotic, but have found that the lymphatic disturbances following is too extensive.

Fatty, cystic, erectile and fibrous tumors are here met; treatment therefor consists in their removal, when their size, situation or presence is responsible for discomfort, physical or mental; and the resulting scar will be of lesser inconvenience than the original trouble.

Cutaneous horns, springing from the skin glands, appear upon the penis; they are hard, of a dirty brown color, and slow growth. Treatment should be: free curettage of the base and the subsequent application of a caustic. (Nitric acid, chromic acid or nitrate of silver.)

#### **Diseased Conditions of the Lymphatics,**

presenting an œdematous, boggy appearance, and frequently with few subjective symptoms, are noticed as a result of some disturbing agent upon the lymphatic vessels. Such a condition may be due to the existence of any form of venereal disease, to the action of any irritating agent, and frequently without assignable cause. Treatment consists in the removal of the element that is responsible. The application of Rx. No. 4:



## No. 4.

R.—Liq. plumb. subacet. dil. ....	℥viii.
Tinctura opii .....	℥i.
Aque Camphoræ.....	℥vi.
M. ft. lot.	
S.—Use locally on cloths.	

Apply by wetting several layers of gauze and covering with rubber tissue; repeat once or twice daily. Should much swelling exist, especially about the prepuce, the part may be punctured in several places, the exudate milked out, and the dressing applied.

**Phimosis**

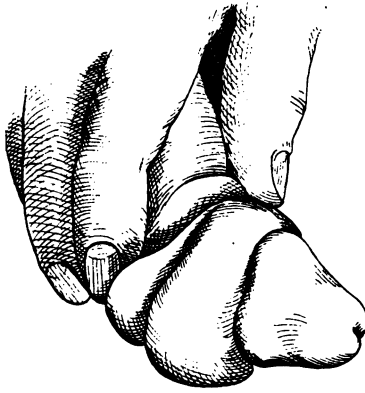
is that stenosed or narrowed condition of the prepuce which prevents the glans-penis from being uncovered. This defect may be congenital, or it may be acquired through the action of inflammation or injury. Such a state begets much trouble, and is within itself the source of much annoyance. Treatment is circumcision when conditions are favorable.

**Paraphimosis**

(Fig. 9) is that condition of prepuce or glans-penis preventing the return of prepuce when once it has been retracted behind the glans. When the constriction is brought to bear upon the glans-penis the return of blood is either arrested or obstructed in part. There is at once necessity for attention, that gangrene, pain and swelling may be prevented. After cleansing and anointing the part, the prepuce should be grasped, the circumference of the glans decreased by pressure, and the part reduced (as illustrated by Fig. 10); failing in this, the prepuce should be slit upon the dorsum until all constriction is overcome, after which, if the integrity of the parts will admit, circumcision should

be performed. There are other methods for prevention of this condition, consisting in enlarging the preputial orifice, that need only be mentioned, for gradual and forcible dilatation in adult life are operations quite absurd.

FIG. 9.



Paraphimosis.

Drawn from nature for the author by Dr. L. Crucius.

FIG. 10.



Reduction of Paraphimosis.

Drawn from nature for the author by Dr. L. Crucius.

### **Herpes Progenitalis**

is a local cutaneous affection appearing upon any part of the penis, preferably upon the semi-mucous surfaces. Clusters of vesicles that are quite discrete at

first, but from their situation become irritated by unclean discharges and coalesce. These lesions make their appearance rather suddenly, and frequently become eroded, the vesicle or vesicles then present an erythematous base; occasionally pain of a neuralgic character attends the development of such an attack, also general nervous disturbance at times is noticed; an uncomfortable burning and itching is not unusual. Certain dispositions favor the development of this disease—rheumatism, gout, diabetes and the neurotic state. One attack favors another, and any condition that begets an uncleanly state predisposes to it.

Herpes Progenitalis may or may not be of venereal origin, and is to be distinguished from several important conditions by reference to table, page 43.

The treatment of this affection is: cleanliness in all that the term implies; the individual lesions may, with advantage, be touched with nitric acid or nitrate of silver, especially if ulceration develops, first applying five per cent solution of cocaine to allay pain. If the glans-penis can be kept uncovered, a lead and opium application may be used. I find tannate of glycerine, undiluted, of great benefit, applied twice daily. The dry powders are of service. Prescriptions 5, 6 and 7, may serve the purpose.

## No. 5.

R.—Bismuthi sub nitras..... } aa ʒii.  
 Acidum boricum..... }  
 Pulv. camphoræ ..... gr. xii.  
 M. ft. pulv.  
 S.—Apply to the parts three or more times daily.

## No. 6.

R.—Acetanilid ..... }  
 Acidum boricum..... } aa ʒi.  
 Zinci oxidum..... }  
 M. ft. pulv.  
 S.—Apply three or more times daily.



Table of Differential Diagnosis.

	CHANCERE.	CHANCROID.	HERPES PROGENITALIS.	EPITHELIOMA.
<i>History</i> .....	Invariably due to infection from a syphilitic, usually through sexual contact.	To infection from a chancre, usually through sexual contact.	To neurotic or rheumatic diathesis, irritants and unclean discharges, independent of sexual contact.	Sexual contact not necessary, possibly prolonged irritation and a history of cancer in a parent.
<i>Incubation</i> .....	15 to 35 days.	24 hours to 4 days.	None.	None. Many months before the sore attains a size to call for attention.
<i>Situation and Number</i> .....	Usually on the glans-penis or prepuce, and single.	Glans-penis and prepuce, as a rule, and multiple.	Prepuce and glans-penis, multiple.	Prepuce and other parts of the penis, single.
<i>Shape and Appearance,</i> .....	Circular or oval, slight discharge, not highly inflamed, superficial, often elevated, well-defined margins.	Irregular margins, round or oval. Excavated, worm-eaten appearance, copious purulent discharge, highly inflamed, shades off to natural color.	Irregular, confluent, forming imperfect circles, superficial, serous discharge.	Irregular, indolent, nodular, discharge serous, bloody and offensive.
<i>Induration</i> .....	Begins as an erosion, ulcer, tubercle or papule. Hard, cartilaginous or parchment-like, freely movable.	Begins as a pustule or open ulcer, never indurated except from irritation.	Begins as a single or group of vesicles, which may ulcerate, but without induration.	Irregularly indurated.
<i>Subjective Sensations and Secretion</i> .....	Little pain. The secretion scanty and not auto-inoculable.	Painful, secretion abundant, purulent and highly auto-inoculable.	Pain of an itching, burning character secretion serous; when mixed with foreign matter is mildly auto-inoculable.	May or may not be painful. Discharge bloody, serous, and may possibly be auto-inoculable.
<i>Bubo</i> .....	Constant, multiple, small, bilateral (at times), painless, and do not suppurate (as a rule).	About 35% of cases develop bubo. Usually single, large, painful, followed by suppuration.	Rarely does bubo develop. When it does, it is due to progonic bacteria infesting the lesion. Single, large, painful and frequently suppurates.	Lymphatic enlargements come after months. Firm, indolent, break down late and discharge a cancerous material.
<i>Prognosis</i> .....	Is good; the sore often heals rapidly, especially if mercury is given; relapses are rare, but slight scar is left.	Doubtful. The lesion may continue but a few days or it may remain many weeks; relapses are common; auto-inoculation may make it indefinite. Great destruction, followed by extensive scar.	Good. Cleanliness may dispose of such disease remarkably quick, little or no scar is left.	Bad. The tendency is to enlarge and involve new areas.

## No. 7.

Rx.—Aristol ..... } aa ʒi.  
 Creta preparata ..... }  
 Unguent. aquæ rosæ ..... ʒi.  
 M. ft. Unguent.

S.—Apply to the parts on cloth.

Campho-phenique powder is good. Stearate of zinc, with aristol; in fact, any non-irritating antiseptic application. Attention should be given to any irregularity of constitution or habit. Rx. No. 8 or some appropriate alterative should be prescribed in those recurring cases.

## No. 8.

Rx.—Acidum arsenosum ..... gr. i.  
 Strych. sulph. .... gr. ii.  
 Ferrum reductum ..... ʒi.  
 Quininæ sulphas ..... ʒi.  
 Resina podophylli ..... gr. v.

M. ft. pil., No. lx. (in caps.)

S.—One after each meal.

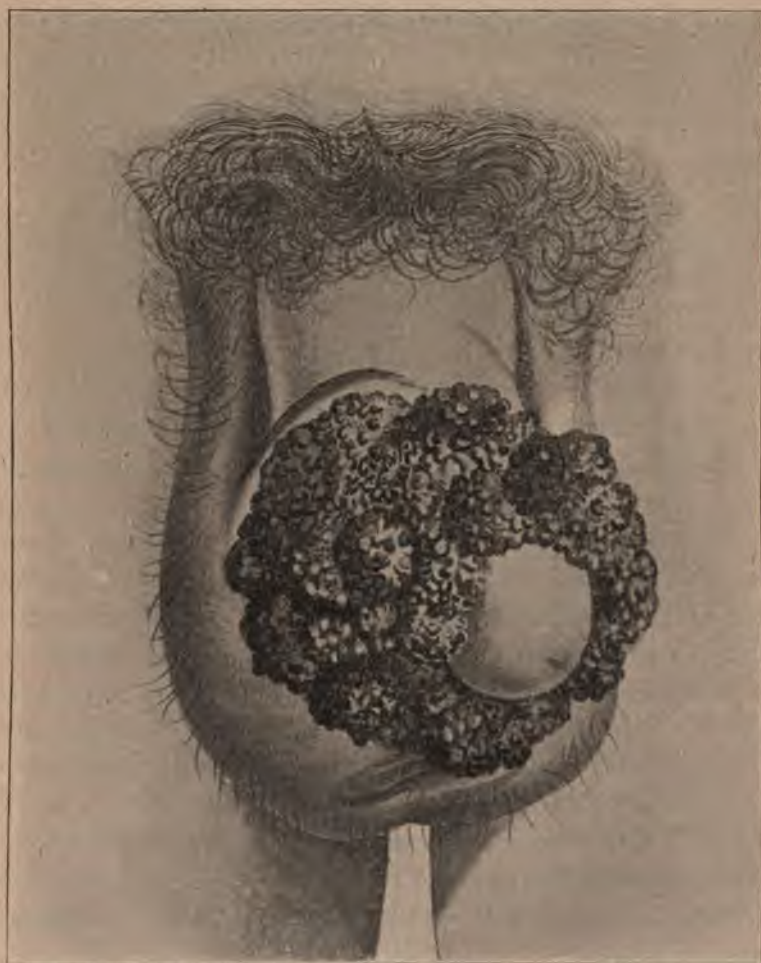
**Veneréal Warts,**

as will be observed from Fig. 11 (which is rather an extreme example), are papillary overgrowths, highly vascular, presenting a rough, warty or cauliflower contour. This condition may appear as a single, insignificant vegetation, either upon the semi-mucous surface, or upon the skin, or extensive areas may become the seat of such disease; any unclean, moist area favors their development; there is a decided tendency to spread, and no doubt there is an element of contagion; a characteristic, disagreeable odor is usually noticed. Large growths may present a small pedicle, or a small growth may have a relatively large pedicle.

The treatment is very much the same as for herpes progenitalis: cleanliness, freeing the parts of moisture, applications of solution perchloride of iron, pure tannic acid, etc. When local treatment fails to produce de-

cided effects, the growths should be lifted and clipped off with scissors, the scar touched with nitric acid, and

FIG. 11.



Venereal Warts.

the parts treated to dry, antiseptic, non-irritating dressings. Circumcision is almost always indicated.



**Balanitis and Posthitis**

are terms expressing an inflammation respectively of the semi-mucous membrane of the glans-penis and of the prepuce. The one rarely exists for any length of time without giving rise to the other. These two conditions are developed very much from the same causes that are responsible for herpes progenitalis and venereal warts. Venereal diseases, on account of acrid discharges, disturbing the nutrition of the surfaces, are responsible, the same as other agents capable of producing like disturbances. The most extensive attack that has come to my notice was due to the parts being dusted with a powder prepared for cold feet. The patient believing the head of his penis to be too cold and damp applied a powder that had been used with satisfaction upon his feet, with the effect of producing a rawness of these surfaces, followed by ulceration, great swelling and pain.

The entrance into the circulation through these abraded surfaces of pus-producing micro-organisms occasionally results in extensive ulceration, bubo, etc. The usual appearance of the surfaces in this disease is what would be expected; should boiling water be poured upon the parts, the mucous membrane is reddened and inflamed, slips off in patches, leaving a denuded and tender surface.

In the treatment, cleanliness is of first importance. The remedies known as the bland, antiseptic, dusting powders are in order. Prescriptions 9 and 10 suggest themselves:

## No. 9.

Rx.—Tannate of glycerine..... $\overline{3}$ i.  
 Fl. ex. of belladonna ..... $\overline{3}$ i.  
 M.  
 S.—Wash the parts and apply with gauze twice a day.

## No. 10.

R̄.—Plumbi acetas .....	℥iss.
Fl. ex. hydrastis .....	℥i.
Aqua destillata .....	℥vii.
M. ft. lot.	
S.—Apply several times daily.	

A long prepuce should be removed to prevent recurrence.

**Ossification of the Penis**

is so rare that its mention only will be made.

**Calcification of the Penis,**

while relatively rare, occurs. An earthy deposit was removed by the author, measuring three and one-eighth inches in length. Treatment is surgical and general.

**Hypospadias**

is that congenital defect due to arrest in development of the penis, resulting in a cleft of the urethra, the side walls failing to unite in the median line below. This defect may exist to a degree so slight as to attract no notice, or it may exist in a way that the entire urethra is abolished, even the scrotum being bifid. These extreme situations make the male genitals resemble the female, and many reputed cases of hermaphroditism are in reality examples of hyposadism. The correction of this defect is important from a double standpoint; aside from the real urinary inconvenience attached to such a state, the ejaculation of semen is upon the floor of the vagina, and not against the os. uteri, as it should be. There is a nervous or psychic trouble associated with this defect that often bears heavily upon the well-being of the individual, and makes surgical interference imperative.

**Epispadias,**

as its name implies, is an opening above, or a fissure of the roof of the urethra, with obliteration of the urethral



canal. It is much rarer than hypospadias, but occurs with all the varying degrees, even to exstrophy of the bladder. What has been said in connection with hypospadias applies as well here, the conditions cannot be mistaken, and surgery of the most delicate kind holds out hope of relief.

#### Circumcision

is the operation for disposing of the prepuce, and is, perhaps, one of the most ancient applications of surgery. Among the Hebrews (since the time of Abraham, nineteen hundred and forty-one years before Christ, up to the present day), it is instituted as a religious ceremony, the eighth day being the time for its performance. Other European people practice it as a prophylactic measure. There are many reasons why the practice should be encouraged throughout all civilization.

1st. The presence of a long prepuce induces masturbation.

2d. A long prepuce predisposes to nervous phenomena, neurasthenia sexualis, precipitate ejaculation, etc.

3d. Is an accumulator of filth.

4th. Predisposes to venereal diseases of all types.

5th. Predisposes to the development of that long list of diseases not strictly venereal—balanitis, posthitis, venereal warts, paraphimosis and its complications.

6th. Is responsible often for undevelopment of glans-penis.

Notwithstanding the many advantages coming to one through such an operation, there are many who attach little consequence to the existence of a long and tight prepuce. The want of space denies the writer

an extended presentation of the beauties and advantages of this time-honored procedure—circumcision. There are many methods in vogue for the performance of this work; that which insures the best return, or corrects most completely the condition for which it is done, is to be preferred. No man's work is always, and without fail, what he would have it, no matter what has been his method. This lack of idealism is often no fault of the operator, but due to indifference upon the part of the patient. Having been attentive to the results, as occasion has offered, I am free to say, that all things considered, the Jewish Rabbi does his work inferior to the genito-urinary surgeon.

The esteem with which the penis is regarded, its influence upon the happiness and life of man, demands that whatever is done should be with due appreciation of the part. Therefore, do not mutilate this organ with a careless operation, as is so often done. Do not reconcile yourself to believe that it is so simple an operation as not to deserve the closest attention to detail.

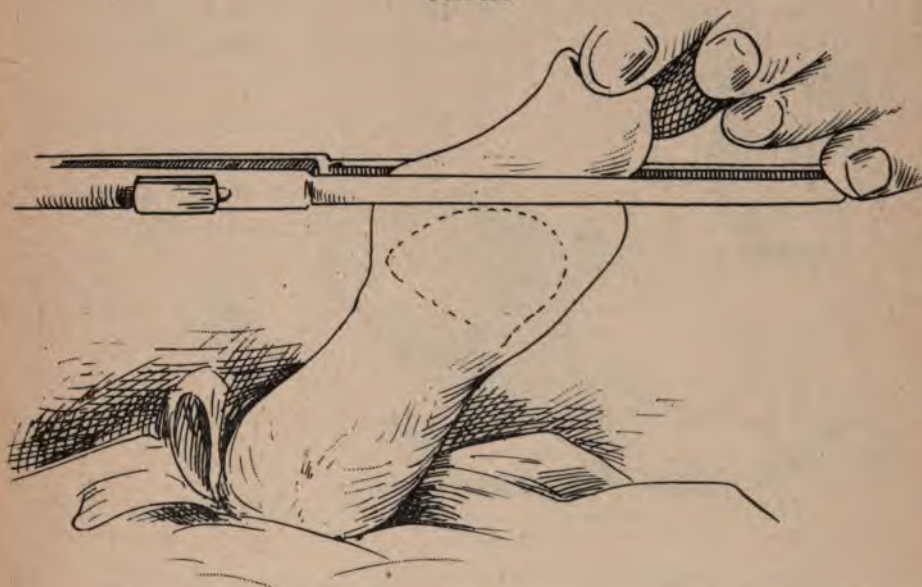
The operation upon babies should be essentially the same as upon adults. Most authorities recommend no suturing of the parts, and advise you that perfect or satisfactory co-aptation will result without such effort; by comparison of results without, and with sutures, one will be struck at once with the advantage of perfectly approximating the structures. I, therefore, with much emphasis, declare that it is unjust and unsurgical to expose these little ones to infection from an open wound, or to the embarrassment in after life of an irregular and unsightly member, when there is no reason for it. The only difference there is in the work during the two periods of life is, that in the babe I use





I inject twenty drops of a five per cent solution of cocaine with a long fine needle, making the puncture upon the dorsum anterior to the analine line, passing the needle between the skin and mucous membrane to the frænum, at which point I deposit a few drops of the solution, gradually withdrawing the syringe, keeping its point anterior to the analine line, injecting

FIG. 11.



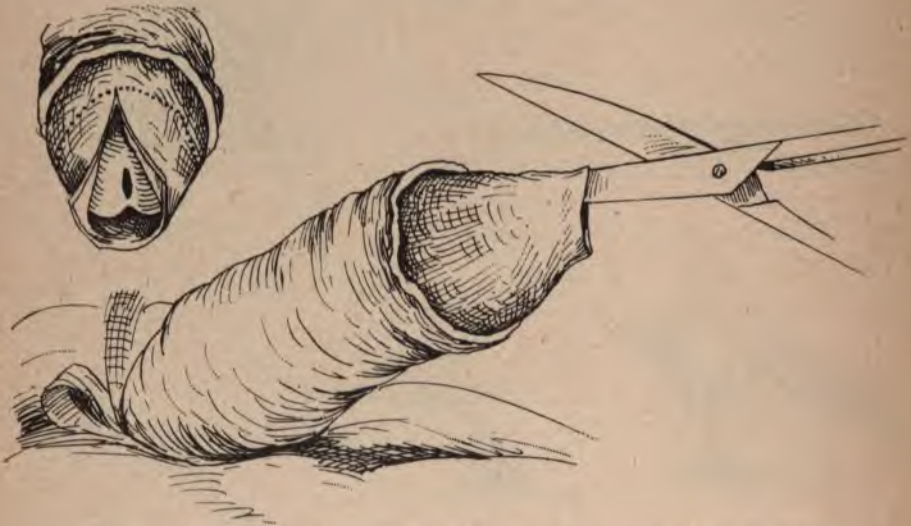
Application of Author's Clamp in Circumcision. Drawn from Nature.

during the while, until ten drops have been regularly distributed between the frænum and point of insertion; when the needle has all been removed, except the first quarter of an inch, I treat the remaining side in a like manner, making, as will be seen, but one puncture. After a lapse of from eight to ten minutes I securely constrict the penis about its posterior portion with a piece of small rubber tubing. This is done for the



triple purpose of preventing undue systemic absorption of cocaine; second, of confining the action of the drug to the desired area, and third, controlling hemorrhage. Then with two artery forceps, one fixing the lower præputial angle, embracing the median raphe, the other at a point directly opposite, traction is applied in a way that the sides are stretched alike, and the blue

FIG. 12.



Preparing the semi-mucous membrane in the operation of Circumcision.  
Drawn from Nature.

lines of the pencil lie opposite each other. With any circumcision forcep, straight or curved (preference is given my own, Fig. 11), applied in a way that the analine line falls about one-eighth of an inch anterior to the forceps. Releasing the artery forceps from the angles of the præputial orifice, with the left hand the prepuce is made taut; with a strong pair of curved scissors the cut is made, close to the forceps and pos-

terior to the analine line. The forceps are now removed; the semi-mucous membrane, which has not been cut, is slit upon the dorsum to a point one-eighth of an inch anterior to the skin cut (Fig. 12); both sides are trimmed evenly and regularly from this angle, leaving a mucous margin one-eighth to three-eighths of an inch wide. The part is now sponged with warm bichloride solution (2,000), the constriction removed; bleeding vessels are caught and twisted, oozing veins controlled with hot compresses.

FIG. 13



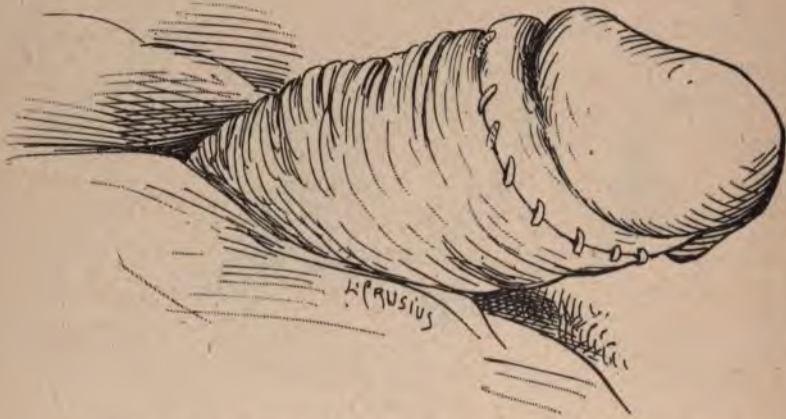
Application of the suture in the operation of Circumcision. Drawn from Nature.

With a curved, round-pointed needle I apply the first suture, uniting the lower-pointed skin surface, that includes the median raphe, to the frænum (the acute angle made here will precisely receive the triangular skin), then with the continuous suture (Fig. 13), applied from without, the skin and semi-mucous membrane are brought evenly and securely together, the last suture being applied near the frænum, and being secured to the first. When the work has been thus done, it will be seen that the anterior face of the united



parts will be of semi-mucous membrane (Fig. 14), on account of this tissue being trimmed slightly longer, the advantage being that the new præputial border will be pliable and elastic, and the sutures will be upon the outside, where there is no debris. The parts should then be enveloped for one-half hour in a temporary wet bichloride dressing, compressed with a bandage to control all bleeding coming from the needle punctures. This dressing is then removed and the

FIG. 14.



Operation of Circumcision complete. Drawn from Nature.

member dressed permanently with a close-fitting, wet or dry, dressing (provision being made for the meatus), and the whole fixed close to the abdomen with a modified T bandage.

The dressing is not to be removed until the fifth day, except it becomes disarranged or soiled. At which time the sutures are removed, the penis should be protected for two or three days longer with a light, dry dressing, after which the case is discharged.

### Amputation.

Amputation of the penis is necessary at times in consequence of a gangrenous state, due to infectious processes, or to traumatism. Mature judgment is to guide one in passing upon so important a proposition; and amputation under these circumstances is to be advised only after diligent conservative measures have failed, or from the very nature of the situation the life of the patient would be jeopardized by delay.

Amputation of such a portion of the penis is done as will meet the desired aim.

Those malignant processes (especially epithelioma), demand, as a rule, amputation of the entire organ, together with the removal of all lymphatic glands in any way involved. I believe, too, that no better and no more generous turn can be done the unfortunate patient than at the same time perform double castration. By the removal of the penis alone those natural sexual desires continue, with no prospect or possibility of natural gratification; and on this account the life of such an individual might become a burden and a disappointment in many ways. There are a number of methods for doing this work. Should amputation of a portion of the organ be decided upon, it will be well to remember that the remaining part of the member may retract after division, carrying with it the open blood vessels to a degree that will lend embarrassment to the situation. When amputation is done upon the posterior pendulous portion, the part should be transfixed with long pins, or anchored with a substantial suture. A sound introduced into the canal, and the penis pulled forward, greatly facilitates the work. A circular incision through the skin, anterior to the proposed division, is made, the skin retracted, the corpora caver-



nosa and the corpus spongiosum are divided down to the urethra, all bleeding is controlled, the urethra grasped with two small forceps from either side, the sound removed; the urethra is now divided one-fourth to one-half inch anterior to the division of the corpus spongiosum proper; a vertical slit is made into the urethra, dividing its projecting portion into two lateral flaps, which are united with fine sutures to the skin flaps of the respective sides—the skin from below and above is likewise attached to the upper and lower portions of this mucous tissue.

I have found that the elasticity of a generous mucous flap of this kind will enable one to cover the end of the stump. The ecraseur and the galvano-cautery have been used for amputation here, with the view of obviating hemorrhage. Personally, I have not been impressed with such a procedure, hence I have no experience with either. The entire penis may be removed with or without castration; I have always advocated castration in such cases, for reasons briefly mentioned, and, as a result, most of my complete amputations meant amputation and castration. Another reason for castration is, that amputation is almost always done for malignant disease; where the testes remain there is little rest of the genital organization—a condition much desired when dealing with pathologic conditions so prone to recur.

My method of removing the entire penis is a modification of Delpeche's, which was known in 1837.

If castration has been agreed upon, I first remove the testes and excise the inner half of either scrotal sac (or the middle half of all scrotal tissue). If castration is not done, the median raphe is carefully dissected, beginning at the anterior scrotal angle, and

carried to the posterior scrotal angle, thus dividing the pouch into its two compartments, containing in either its testicle.

The operation from this feature on to its completion is applicable in either situation.

The membranous urethra is now opened and fixed (temporarily). All the tissue down to Buck's fascia is divided about the root of the penis, the crura of the corpora cavernosa are dissected from their attachments, bleeding vessels caught with long forceps and secured; the urethra at its membranous portion is freed, and planted in the median line in the perineum, by uniting it with the scrotal tissue. (The introduction of a sound in this operation is an advantage.)

## CHAPTER III.

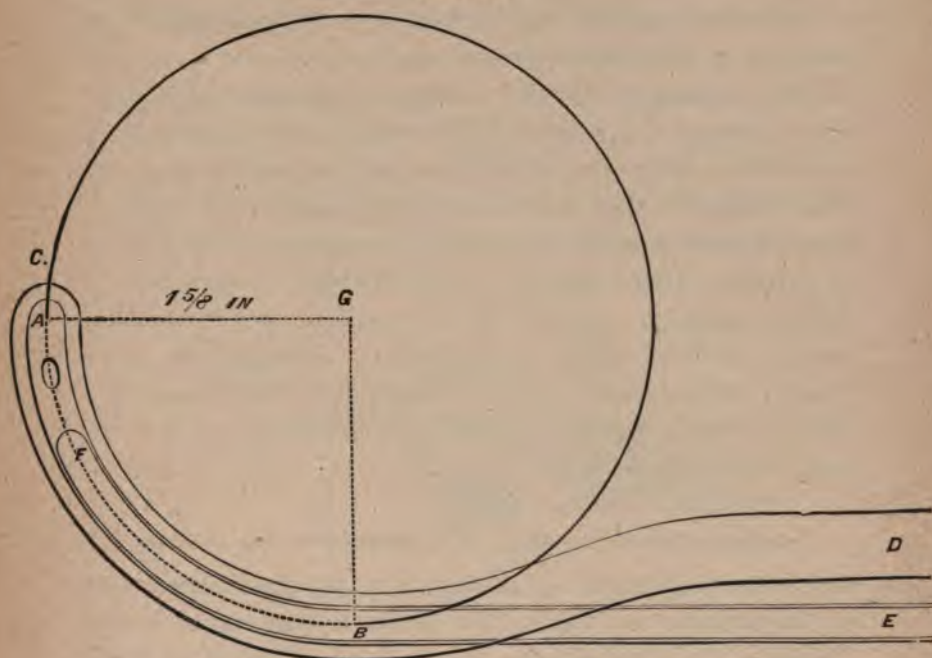
THE PROPER CURVE OF THE URETHRA—PROPER CURVE OF INSTRUMENTS — IMPERFORATION AND ATRESIA OF THE URETHRA—CATHETERISM—HERMAPHRODISM—URINARY FEVER—HYGIENE OF THE SEXUAL AND URINARY ORGANIZATION—FOREIGN BODIES IN THE URETHRA.

Rather distinct knowledge of the proper curve of the urethra can be had from the anatomy.

The natural curve of the urethra is the guide in the construction of urethral instruments. Hence, the curve of instruments should be identical with the curve presented by the normal urethra. It is quite important that this lesson be impressed, for much, and unnecessary, injury is often done these parts for want of this information.

A rule for the selection of instruments that I have found applicable to the greatest number, and one always at hand, is the fourth part of the circumference of a circle having a diameter of  $3\frac{1}{4}$  inches, as illustrated by Fig. 15. The sound A.B.E. is the most applicable. From frozen sections and plaster injections of the normal urethra, I am convinced that this is the curve of the average urethra; this, too, is the experience of Thompson, Gouley, Van Buren and others. Otis and Bumstead recommend the short curve F.B.E., while Béniqué advocates the longer and different one C.B.D.

FIG. 15.



Showing curve for urethral instruments.

The sound represented by the letters A.B.E. is that curve or shape recommended by the author.

#### Imperforation and Atresia of the Urethra.

Congenitally, the urethra may be imperforate; the irregularity may be confined to the meatus or its immediate vicinity, consisting of a mere partition, only necessitating puncture with a trocar, or dividing with a knife, continuing the opening by the passage of sounds. Or, the obstruction may be very extensive, the urethra being taken, partially or completely, by a fibrous material, which condition is more properly called Atresia.

When either imperforation or atresia exists for any length of time after birth, the situation at once be-



comes alarming, except nature has provided another outlet for the urine, which would be through the open urachus, or into the rectum.

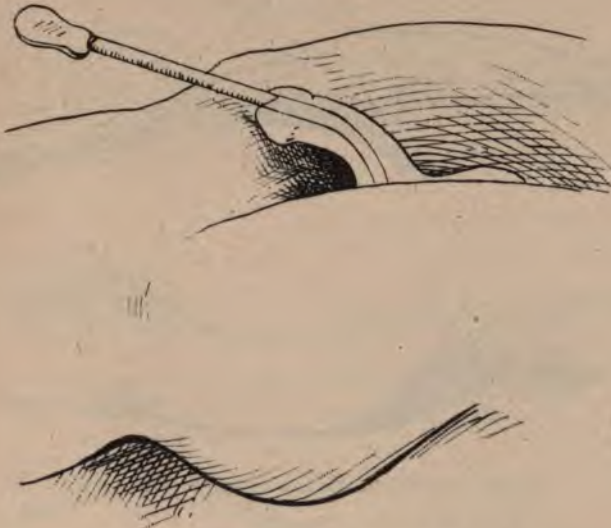
The treatment for this defect is surgical; if there can be found a portion of the urethra that fluctuates, an incision here would liberate the retained urine, and afford time for the correction of the irregularity. Otherwise, a dissection of the urethra throughout its occluded portion (from meatus to the bladder, if necessary). This operation should be along the lower median aspect of the corpus spongiosum. Failing in your purpose, the trocar may be resorted to for temporary relief, when a second attempt at correction of the defect may be successful.

#### **Catheterization, Sounding, or Exploration of the Urethra**

are terms expressive of the art of applying instruments to the bladder by way of the urethra; the term is applicable to instruments made use of in this way, whether they be Catheter, Sound, Bougie, Staff, or Searcher, soft or hard, flexible or fixed. Preparatory to the introduction of instruments, it is imperative that strict surgical cleanliness prevail. No instrument should be used that has not been cared for. No ointment or lubricant employed that is not sterile. Soft instruments are lubricated and passed with little regard for the urethral curve; their blunt or olive points will naturally adapt them to the part. The English and French instruments will obey in a like manner. The metal and fixed instruments, however, are to be used with greater caution and understanding. When the urethral curve and the curve offered by the instrument are appreciated, the fitting of the one to the other is a matter of the greatest ease, and a metal instru-

ment can then be applied with corresponding facility and satisfaction. It should be remembered that a sound or metal instrument in the hands of a surgeon is nothing less than a lever. A few ounces of misdirected force upon the handle will return many pounds of damaging pressure at its other extreme. There is no physician or surgeon who is not called upon to perform this operation. I have been pained to see much

FIG. 16.



First position in the introduction of a sound.

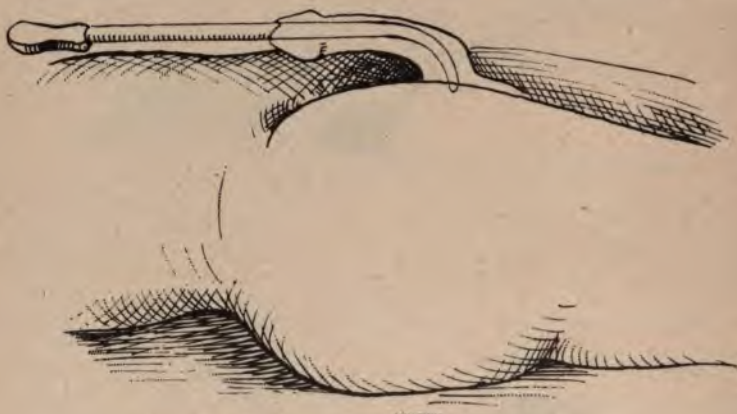
bungling work here, at the hands of those who should show greater skill.

The sound should be maintained with its point always following the course of the urethra; little force is required—the weight of a solid instrument is often sufficient where no obstruction is found; the urethra should be drawn over the instrument rather than force the instrument through the urethra.



With the patient upon his back, the legs slightly flexed and separated, the surgeon upon his left, the penis is lightly grasped at its neck by the index finger and thumb of the left hand; the sound (warmed and oiled) is entered parallel to Poupart's ligament (Fig. 16). Its weight, assisted by adjusting the penis, will carry the point to the anterior surface of the curved or fixed urethra; now gently rotate the instrument toward the linea alba (Fig. 17) and it will

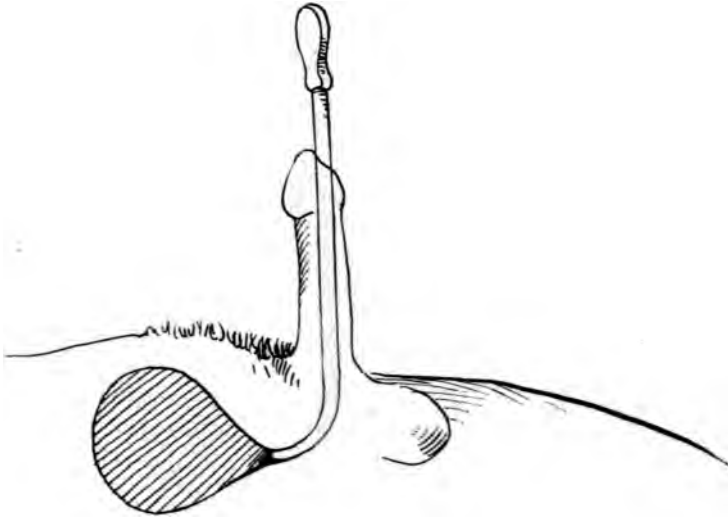
FIG. 17.



Second position in the introduction of a sound.

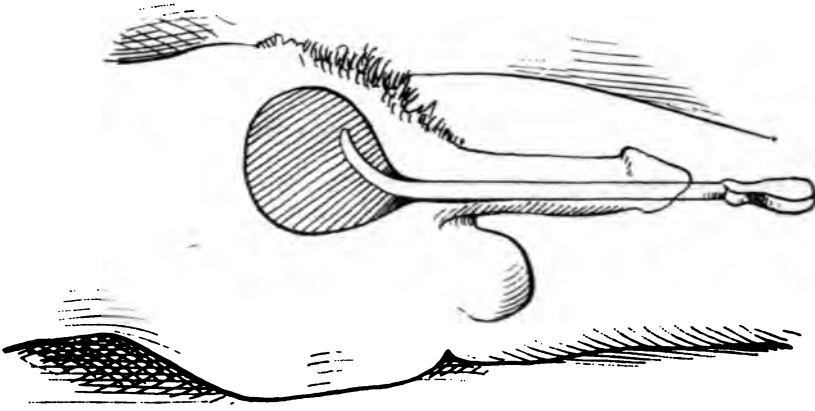
be observed that the point enters the curve of the urethra as the instrument is raised from the abdomen. When the perpendicular has been reached (Fig. 18), the point of the instrument has traversed the curve; by depressing the handle of the instrument its point enters the bladder (Fig. 19). To remove the instrument, reverse the motions necessary for its introduction. No pulling is necessary; simply raise the handle to the perpendicular; carry it forward until it is in relation to the linea alba; describe an angle of forty-five degrees

FIG. 18.



Third position in the introduction of a sound.

FIG. 19.



Fourth and last position, the sound having entered the bladder.



upon the same plan, all the while crowding the penis back; now elevate the remote end of the sound with its point downward and the penis drops from it.

#### **Hermaphroditism.**

The condition indicated by the term "hermaphrodite" is one that might well have been disposed of under the caption "Hypospadias," for the vast majority of such monsters are but extreme examples of that defect. However unimportant it may be from a strict medical and surgical attitude, yet a brief mention of the investigations made by the author into these matters may not be lacking in interest and scientific worth. I have never seen a being possessed of double gender, to a degree of full sexual potency, in either capacity, yet I am quite positive that many times it is difficult to decide which sex a given individual has a right to claim. The two illustrated cases represent the most perfect examples of these monstrosities that has come to my notice. The first case (Fig. 20) is a photograph taken at my clinic, December 21, 1895. I quote from my remarks upon that occasion:

"P. S. was born in the town of ———, County of ———, State of ———, on the 18th day of May, 1868; father, an American Indian; mother, English. Has three brothers and one sister, all normal, all married, and all have children. Occupation, bare-back rider. Her early association was that of a female. She was reared, dressed and considered as such. Has menstruated rather regularly since the age of eighteen. At one time missed for three consecutive months. Suffers some pain in the back, abdomen and breasts during this epoch, the flow being bright red and thin. There is no leucorrhœal discharge. Has never copu-

lated with a male; never had a desire. Has been married to a woman for three years. Has substantial erections once in twenty-four hours. Copulates two or three times a week and experiences the usual sexual

FIG. 20.



Pauline S., Hermaphrodite.

pleasure. Has no regular ejaculation of seminal fluid, but a copious discharge of colorless, limpid fluid."

With this outline of unauthentic history, I now present to you P. S.

"Gentlemen, as this character stands before you, clad in the habiliments of femininity, I am unable to



detect any radical departure from the usual type of womankind, occupying the lower plane of society. The face in contour is distinctly feminine. Her skin is devoid of hair, soft and elastic. When she speaks it is with a masculine voice.

“Removing her clothing we discover the neck and chest of a man; no mammary development, with arms of a woman and the hand of a man. The abdomen is likewise masculine, the hips and pelvis a compromise, the distribution of hair, prominence of symphysis pubis, feminine. Thighs masculine, leg and foot feminine. Height, five feet four inches; weight, 146 pounds; complexion dark. I hardly think it necessary to now call your attention to the genito-urinary neighborhood, for I am convinced that this region has thus far commanded your attention. However, I find this member to clearly be a penis. Looking at it from above it could not well be mistaken for anything else. In its present state of repose it measures three and one-half inches in length, and exhibits the usual make-up, so far as pigmented skin, corpora cavernosa, glans-penis and prepuce are concerned, all under size. Examining from below, I discover the corpus spongiosum has failed to unite, leaving a cleft throughout the entire pendulous portion. I further find, in addition to the loose tissue on either side of the undeveloped corpus spongiosum urethrae, and occupying the usual site of the female labia majora, two large tags or flaps of pigmented tissue, lined upon their inner aspects with mucous membrane, clearly showing that nature had at least done some work with the labia majora in view. Between these bodies can be plainly seen an aperture, having the resemblance of a vagina, with an opening that you discover readily admits my index finger.

Passing backward for about two and one-half to three inches, the finger is well within a receptacle having the appearance of a cul-de-sac or blind pouch, rather roomy at the bottom. It is now that I search for the os-uteri, or other female organs of generation. In this search I fail to detect anything that could be accepted for a uterus or ovaries. Another search proves equally fruitless. Hence we must doubt the correctness of the statement that she menstruates. I, however, detect about midway in the roof of this vagina an opening, which is the meatus urinarius. Here, also, I discover a body that I take to be a prostate; it is small, irregular, but a median fissure is detected. Arising prominently from the base of the penis, on either side, we have a scrotum in two sections, each containing a testicle, normal so far as the spermatic chord and epididymis can make it. The impression these bodies afford me is that, as a male, the patient is well represented. Passing the finger up the rectum I again detect an apology for a prostate. This body is insignificant as compared with a normal gland. In this locality I am still unable to detect either uterus or seminal vesicles, though I am inclined to believe these latter do exist.

"This, then, concludes the examination. When your professor of anatomy, Dr. Keiffer and Dr. Bond, have examined, the class will form in procession, as before suggested, when each of you may personally examine, after which a photograph will be had.

"In conclusion, I will give it as my opinion that nature, in her efforts to determine the sex of this specimen, became involved in some confusion, and the result of her efforts certainly exhibit evidence of double gender, tintured especially with masculinity.



“Congratulate yourselves for being able to examine this rare and interesting monster.”

FIG. 21.



Hermaphrodite. Compliments of Dr. B. Merrill Ricketts.

The second case (Fig. 21) comes as a compliment from my friend, Dr. B. Merrill Ricketts, of Cincinnati, Ohio.

The age of the patient at time of her death was thirty-three years; had a fair-size penis, four inches long while flaccid; a vagina that was roomy. Was married to a man, but could copulate with a woman.

#### Urinary Fever.

A form of fever following urethral instrumentation, and manifesting itself in one of three ways, has been denominated Urethral or Urinary Fever. For many years, and even to-day, some hold that this fever is the result of nervous shock, and offer no rational explanation for its occurrence. I could never reconcile myself with such a position; in fact, I have always maintained that which is now generally accepted and demonstrated concerning its etiology.

Urinary fever, then, is a septic infection which may be occasioned by the introduction of instruments bearing unclean matters, which material is deposited upon abraded or susceptible surfaces, from which absorption into the general circulation takes place; or, by the absorption of septic material already within the urethra, the instrumentation so disturbing the continuity of the urethral mucous membrane, or altering its nutrition, as to afford an avenue for absorption; or, the absorption into these areas of infectious elements coming from beyond the urethra.

This fever, then, could be conveniently divided into three classes, and each given distinct notice, yet I will endeavor to so treat the subject generally as will obviate the necessity of so doing.

If, then, the urinary organs are in a healthy state, the urethral instruments surgically clean, and handled properly, there can be no possible danger of



exciting such an attack. When such an ideal condition of things exists there is seldom need for instrumentation; it is in the face of diseased conditions, when debris occupies the field, that we are called to explore this area; our greatest and best efforts then lie in the direction of preventing such an infectious process. The urine should be carefully investigated, the bowels and skin looked after, the urethra irrigated, etc.

The character of the pus-producing element that is present, and the soil upon which it is sown, are the essential factors governing the type of urinary fever. The disease may express itself in all grades of severity. The usual display of symptoms and conditions, beginning with the first act of micturition following urethral exploration, being a chill (mild or severe), promptly followed by fever ranging from 102 to 105 degrees F., and then by a sweat proportionate to the fever. This, together with neuralgic pains, nausea or vomiting, may constitute the attack, and the patient at once becomes convalescent. If the infectious material be more potent, or the patient exhibits a greater susceptibility, or diminished resistance, all of the above characteristics will be heightened. The chill may be extreme and greatly prolonged, continuing for hours; the fever may run high, the skin hot and dry; delirium, vomiting and purging may be a part of such an attack; the kidney functions may become arrested, and every feature of extreme septic infection followed by collapse and death. Or, the condition may be intermediate, instead of convalescence being established as in the first, or of the rapid fatal issue as in the second; there may be a number of chills, followed by a septic condition, that may appear rather insidiously several



days, perhaps, after urethral surgery and continue for weeks, eventually ending in recovery, only after the vitality of the patient has severely suffered.

It is now known that this fulminating and fatal form of urethral fever is largely due to damage already done the kidney by former disease.

In my private work I have not seen urethral fever of any note for several years. The prognosis of this disease depends upon the factors present, and should be guarded at all times.

The treatment, in addition to those measures looking toward its prevention (which are by far the most satisfactory), is local and internal. Absolute rest. Iron, Quinine and Strychnine in combination. Rxs. No. 11 and No. 12 will be found useful as tonics, and will indicate the character of medication called for:

## No. 11.

Rx.—Hydrarg. bi. chlor.....gr. ii.  
Tr. ferr. chlor.....3iii.  
Syr. simp.....3iv.  
M.  
S.—A teaspoonful in water  
every four hours until mer-  
curic symptoms appear.

## No. 12.

Rx.—Lithii. bromidum.....3iv.  
Elix. saw-palmetto }  
and santal co..... } aa 3ii.  
Tr. cinchon. co..... }  
M. ft. sol.  
S.—A teaspoonful in water  
four to six times a day.

A urethra or bladder that has once spread a disease of this kind, through disturbance incident to proper urethral instrumentation, should be dealt with carefully. No instrument should be used for a time, if it is possible to dispense with it. If it is imperative, every detail of cleanliness should be observed.

Sulphate magnesia, in small doses, given to free purgation, if condition will admit, and digitalis, in rather heroic doses, when there is suppression of urine, such treatment that will dispose of effete urinary products is indicated.

Hot poultices, friction and net cups over the kidneys are of service. If uræmia is feared, or present, carefully administered hypodermic injections of muriate of pilocarpine as a diaphoretic, hot vapor baths, sulphonal for the nervousness, brandy, milk, meat juice, pure air, and that general treatment appropriate to divesting the economy of a poison, and substituting in its stead healthy blood. Should abscesses form, they should be opened; should the bladder fail to properly drain itself, a perineal drain should be established, and free antiseptic washings employed.

#### Hygiene of the Urinary and Sexual Organs.

A very important feature in the management of all urinary and sexual diseases is the knowledge and observance of their hygiene. Without regard for this, the best directed efforts may fail in purpose. This subject, then, will be referred to many times in the chapters that will follow.

The term Hygiene, in its usual application, carries with it a sense of good food, pure air, cleanliness, rational exercise and those many matters essential to the promotion of well-being generally. While sexual and urethral hygiene mean no more than this, yet, to have its influence bear upon these areas, it is necessary that recommendations in this situation be specific. It is a matter of comparative ease to have the urinary organs obey our wishes, while much difficulty, at times, confronts us when we undertake the regulation of the sexual appointments. Excess of acid and the presence of crystals in the urine can be overcome by the administration of bi-carb. of potash, ten to twenty grains in water three times a day, or some form of alkali. In fact, many of the unnatural and disturbing



principles found in the urine can be prescribed for with reasonable satisfaction. Its quantity may be regulated as well as the intervals of micturition.

The skin should be sponged and frictioned, the bowels should be opened, the diet light, nutritious and digestible; alcohol, malt, tobacco, acids and stimulants generally should be avoided. The sexual organs, however, being more or less dependent upon the brain for rest, are much more difficult to master; to advise against lascivious thoughts may only mean a more active consideration of such subjects; this centre is beyond control, hence the great difficulty in having that purity of act and will necessary for sexual repose. Proper association, pure literature and a higher morality will add much in this direction. The use of substantial doses of potass. brom., thirty to forty grains in water, three or four times daily, may conduce to quiet. Camphor mono-brom., one to five grains; sulphonal, ten to fifteen grains; chloral hydrate, five to twenty grains, and other members of this class of drugs may be employed with advantage. When the sexual make-up has been once set in motion it goes on unceasingly—nothing will stay it. Proper relations with woman is the only way satisfactory relief is to be had. Intercourse, then, at appropriate intervals, with one's wife is advocated, except those conditions attended by active inflammation.

#### **Foreign Bodies in the Urethra.**

Through a perversion of the sexual dictate, there are many adults who find pleasurable excitement by toying with their sexuals; smooth bodies, like a catheter, bead-headed pins, the ivory-tipped umbrella rib, hair-pins, slate pencils, pens and the like are introduced into the urethra. Occasionally control is lost and such bodies pass beyond the reach of the sufferer.



Children frequently introduce gravel, beads, beans, shot, etc., into the meatus, and are unable to produce them.

Surgeons occasionally lose a part of an instrument, or a pledget of cotton, in the canal—this latter occurred to the author while making an application to a lesion through an endoscope; a filiform bougie was made to engage it, and effected its removal.

Old men who live a catheter life, on account of prostatic disease, lose a part of their instruments in the urethra. The treatment for such conditions is regulated by the character of the body that is confined; if a bean, bead, pledget of cotton, or any body without angles or rough surface, they may pass out during the act of micturition. Bodies, like parts of catheters, slate pencils, etc., may be supported from behind, and so manipulated and coaxed that they will present at the meatus. A pair of urethral forceps may be used with effect.

FIG. 22.



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It may become necessary to open the urethra, which can be done in the pendulous or deep portions; I think it better to always do so through the perineum, and either introduce an instrument through such an opening and push the body forward, or introduce the instrument at the meatus and extract the body at the new opening.

I have never seen a fistula, or damage in this situation follow a clean operation. Stones form in the

urethra, and either pass out, ulcerate their way out, at times leaving behind a fistula, or require removal by surgery.

It is well to advise against pushing any body whatever into the bladder, for when once there the foundation for the formation of stone about it is established, together with that long train of ills following irritation, sepsis and degenerative changes.

## CHAPTER IV.

URETHROSCOPY OR ENDOSCOPY—DISEASES OF THE URETHRA—  
INFLAMMATION OF THE URETHRA—SIMPLE URETHRITIS—  
BASTARD GONORRHOEA—SYPHILITIC URETHRITIS—TU-  
BERCULAR URETHRITIS—GONORRHOEAL URE-  
THRITIS—ANTERIOR GONORRHOEA—POSTE-  
RIOR GONORRHOEA—URETHRAL IRRI-  
GATION AND INJECTION—GLEET  
—RELAPSING GONORRHOEA.

By urethroscopy or endoscopy is meant an examination of the urethra with the eye, aided by a class of instruments and devices, called urethral endoscopes, of which there are many patterns. The entire canal can be inspected with more or less satisfaction. Diseased

FIG. 23.



BLEES-MOORE INSTRUMENT CO.

Koltz's endoscope.

FIG. 24.



BLEES-MOORE INSTRUMENT CO.

Otis' endoscope.

areas can in this way be located, differentiated and treated. Familiarity with such instruments and much practice is essential to successful work. I have found satisfaction from the use of many instruments. Figs. 23 and 24 are simple and convenient; with them the



posterior portions of the pendulous urethra may be examined, diagnosed and treated. Fig. 25 is ap-

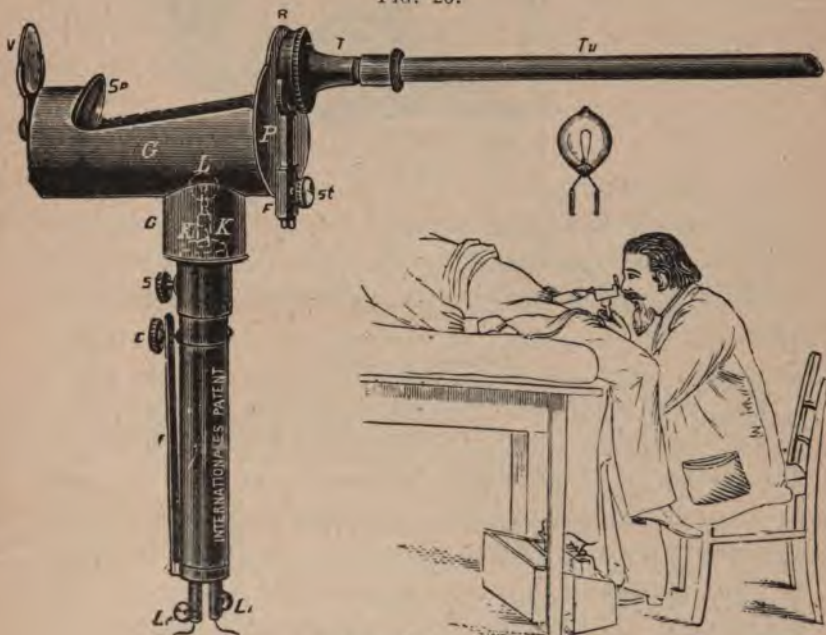
FIG. 25.



BLEES-MOORE INSTRUMENT CO.

Tilden Brown's, without speculum.

FIG. 26.



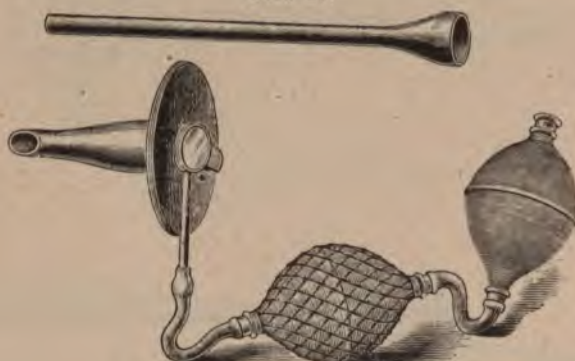
BLEES-MOORE INSTRUMENT CO.

Leiter's pan electroscope.

plicable for lesions in the anterior urethra. Fig. 26 represents Leiter's pan electroscope, an instrument that illuminates the canal most brilliantly by means of

electricity; the other instruments here produced require reflected light from a head-mirror. Fig. 27 is a new and useful invention; the instrument is introduced with its desired tube, the meatus is pressed firmly

FIG. 27.



BLEES-MOORE INSTRUMENT CO.

Aero urethroscope.

about the shoulder of same; by means of the bulb, the urethra is now gently inflated with air, in which condition it is very satisfactorily examined with reflected light.

#### Method of Using.

The instrument should be surgically cleansed, the urethra irrigated (and not in a high state of acute inflammation). Carbolyzed glycerine should be used to anoint the instrument. In this condition the instrument, with its blades closed, or obturator in place, is gently passed beyond the diseased area; now the blades are separated, or its obturator removed, and slowly withdrawn, the eye being intent upon the changing disc as it presents at the end of the instrument, until that portion which is diseased occupies the field, at which time treatment can be made that is in keeping with the character of the disease, after which



the instrument may be removed. Should the deep urethra be the seat of trouble, and it becomes necessary to engage the longer instrument, great caution in having straight bodies pass, and make straight the curved portion; this can be done without damage or much pain. It is my custom to apply fifteen drops of a five per cent solution of cocaine with a deep urethral syringe to this part of the canal prior to its invasion with such instruments. Here, too, hemorrhage is likely to retard the work and many pledgets of cotton will be required to put the part in proper form (care should be exercised lest the cotton be lost in the urethra). Once every four to eight days is as often as the operation is required.

#### Diseases of the Urethra.

This shut canal, lined with mucous membrane, may become diseased in a great variety of ways. Any agent introduced, capable of disturbing its function or nutrition, be that agent an irritating injection, acid, urine, or simple pus-producing micro-organisms conveyed upon instruments or otherwise, the result in any case may be inflammation. Should the urethra, then, take on inflammation due to the presence of any offensive material, even though this material be unclean discharges from the vagina (free from gonococci), and the disease acquired through the copulative act, such an attack is called acute SIMPLE URETHRITIS; the pathology of such a disease is that of simple inflammation of mucous membrane.

The incubative period of simple urethritis is very short; as a rule, twenty-four hours to three days. The symptoms displayed are slight congestion of the meatus with an uneasy sensation, later pus appears, there



is moderate pain during urination, and erections may be painful, generally, however, in a mild degree. The duration is ordinarily about ten days, but shorter and longer periods are frequently noted. The prognosis is good.

The treatment consists in the observance of sexual and urethral hygiene, and the local use of astringent injections.

## No. 13.

R.—Liq. plumb. subacet..... ℥ii.  
 Ext. pinus cann. (color-  
 less) ..... ℥iii.  
 Aqua rosæ..... ℥vi.  
 M. ft. lot.  
 S.—Inject three times daily.

## No. 14.

R.—Zinci Sulphas..... } aa ℥ss.  
 Alumen exsiccæ..... }  
 Mucilago acaciæ..... ℥ss.  
 Aqua destillata ..... ℥viiss.  
 M. ft. sol.  
 S.—Inject three times a day.

## No. 15.

R.—Acidum tannicum..... gr. xxx.  
 Glycerinum..... ℥iv.  
 Aqua destillata ..... ℥vi.  
 M. ft. sol.  
 S.—Inject three times a day.

Almost all the mineral and vegetable astringents used in a mild strength are serviceable. In fact, such an attack will recover without local treatment at all, but not so surely and promptly.

Owing to the existence of simple acute urethritis, and its strong resemblance to acute gonorrhœal urethritis, the drug clerk has become a popular prescriber. The people themselves (especially young men of the world) have learned to prescribe by passing their cherished prescriptions among their unfortunate friends and thereby become the recipients of much praise. For this reason, too, the much extolled and self-lauded patent medicines (guaranteed to cure gonorrhœa in three days, etc.) still hold their places upon the shelves of the apothecary and continue high in the esteem of many.

**Bastard Gonorrhœa, or Sub-acute Simple Urethritis,**

is a low grade inflammation of the urethra, dependent upon a peculiar susceptibility of the urethra to take on disease, which is often on account of damage done the part by previous disease. The usual history offered for such an attack is the acknowledgment on the part of the patient of having had previous urethral trouble. More frequently, that the urethra has been the source of extensive and prolonged disease and annoyance. As a rule, such sufferers are intemperate and excessive in all their habits. You will learn that following a debauch, including indulgence in wine, lunches, and women, the patient detects smarting and a muco-purulent discharge from the meatus upon arising the following morning. This condition will constitute the disease so far as its acuteness is concerned, and there may or may not be found gonococci upon microscopical examination. Sexual and urethral hygiene, together with mild astringents, will soon right the condition, after which the urethra should be explored, when there will be found a lesion, either stricture, congested or ulcerated areas, that is responsible. Appropriate treatment directed to this underlying cause will restore the integrity of the canal and prevent future occurrences.

**Syphilitic Urethritis,**

a form of urethral inflammation, due to the presence of a syphilitic lesion (either primary or a later expression), is occasionally encountered.

If chancre becomes established in the urethral canal, its presence can be detected by its cartilaginous hardness, the character of the discharge (which is thin, serous or bloody, some pus, or a mixture of the

three). Little pain attends such a condition. The history of the case is important in reaching a diagnosis; the glandular development and secondary manifestations may become necessary before the real type of disease is assured. If later syphilitic lesions become responsible for a urethritis, the history, character of the discharge and the endoscope will effect a diagnosis. Treatment in either should be the employment of anti-syphilitic measures internally, and local antiseptic irrigations and washes.

#### **Tubercular Urethritis.**

Tuberculosis occasionally locates itself in the urethra, and there occasions inflammation, in consequence of destructive changes. The subjective symptoms are in keeping with the lesions and their situation, which are rarely extensive; the discharge frequently resembles that due to syphilitic urethritis. The diagnosis will be made by the history, endoscopic appearance, general condition and the detection of the tubercle bacilli. The treatment is general, climatic and local.

#### **Gonorrhœal Urethritis.**

Literally, the term gonorrhœa is faulty, meaning, as it does, a flow of semen. It is accepted, however, and is synonymous with Clap, Blennorrhœa, Blennorrhagia, Specific or Infectious Urethritis.

While the description and treatment of this disease has been assigned to its present position in this chapter, at the same time it is perhaps the foremost and most important matter that engages the Genito-Urinary Surgeon, and is profoundly interesting to the Abdominal Surgeon as well. Attached to this disease is an antiquity as ancient as the history of man. The



Bible unquestionably makes mention of the prevalence of such a disease. The fifteenth chapter of Leviticus affords a very clear account of it. When gonorrhœa (as we accept it) appeared for the first time, and under

FIG. 28.



Gonococci of Neisser.

what circumstances, no man of the present century can positively say, nor is it reasonable to believe that our knowledge in this direction will ever be complete (notwithstanding the beautiful theories of the evolu-

tionists and the diligent researches already made). But what concerns us most is the study and understanding of the disease that we have about us to-day.

Gonorrhœa is an acute, contagious, specific, inflammatory disease of the mucous membrane of the urinary and genital tracts; this disease may also involve the mucous membranes of the eye and rectum; it is likewise asserted, but not clearly proven, that the ear, mouth and nose may become the seat of gonorrhœal disease. While I have not seen gonorrhœa in these two situations, yet I can see no reason why they may not acquire it under favorable conditions. Gonorrhœa is due to the invariable presence of the gonococcus of Neisser, notwithstanding the volumes holding a different view upon this feature of the disease. For several years its etiology has been the subject of debate, and only recently has the science of bacteriology given to the world the unmistakable fact of its bacterial origin; to-day pure cultures are grown and the last link in the chain of evidence in this respect is produced. Any urethritis dependent upon or presenting this form of germ (Fig. 28) can be called gonorrhœa, and a urethritis that (after careful and repeated microscopic examination) fails to display this element, no matter how severe, how protracted, or how complicated it may be, is not gonorrhœa. A gonorrhœa may lose its specific characteristics and become a non-specific urethritis, or it may lead to an injury of some part or parts that will continue the inflammation long after the original disease has passed. Such a state is not gonorrhœa, but a post-gonorrhœal condition; in a word, it is gonorrhœa only when the specific micro-organism exists, or when a given discharge will produce a gonorrhœa when planted upon favorable soil.



A simple urethritis, acquired in any manner whatsoever, will never become a gonorrhœa. The diagnosis of gonorrhœa at times becomes a matter of the utmost difficulty, and greatest importance; difficult on account of the many subjective and clinic features common to the non-specific inflammation, and the negative results of the microscope. The healthy urethra is known to present diplococci, bearing so strong a resemblance to the gonococci, that at times it is impossible to decide between them. It is often of great importance to know the truth, appreciating, as we do, the circumstances under which urethral disease is presented. Often it is the surgeon's attitude in such situations that maintains the integrity of a household, or forever wrecks the future of a family. Many times have I put this knowledge to valuable use. Women are suspicious and jealous creatures; there are few, indeed, who regard man as possessed of virtue, if men were only so good in this sense as the concensus of feminine opinion vote them, there would indeed be little virtue in the land. Women with a discharge often believe themselves the victims of venereal disease, due to their husband's perfidy, and come to the doctor for verification of their views and for advice. Husbands occasionally present themselves to the physician with a discharge that they believe to be gonorrhœal, and suspect their wives of infidelity.

Young men contemplating matrimony are anxious about their urethral disease, and apply for advice. Gonorrhœa is not a blood or constitutional disease, in the usual sense, though some complications seem to indicate as much; yet, as a distributor of disease and discontent, as a despoiler of sexual tone and morals, this disease holds a prominent rank. It is stated by



good authority (to whose views I say amen), that on account of its direct and remote consequences, more victims are yearly sent to their last resting places on account of gonorrhœa than by syphilis.

Indeed, it would be difficult to overestimate its seriousness; the more intimate an acquaintance one has with it, and the more diligence displayed in its management, the greater becomes our respect.

The element that is responsible for gonorrhœa can usually be detected, and with comparative ease; the method of staining and examining is simple, the instruments are not expensive.

A drop of gonorrhœal pus, free from extraneous matter, is received and spread upon a glass slide, a second slide is pressed firmly upon this film of pus, the two glasses are slipped apart, and there is upon the surface of either a proper display of the material. Such a film is now permitted to dry in a clean atmosphere for about five minutes, it is then passed rather quickly through the flame of an alcohol lamp (pus side up) three or four times, (which latter fixes the specimen to the slide) apply to the specimen thus fixed sufficient stain (which may be an aqueous solution of methyl violet, methyl blue, gentian violet, Victoria blue or most any of the blue analine stains) to completely cover the specimen. Continue the application of the stain for about three minutes, when the slide is tilted and the stain runs off, a gentle stream of cold, pure water is permitted to wash away the excess of stain from the specimen, when it should be carefully dried and mounted with Canada balsam.

A microscope with a magnifying power of not less than 500 diameters (a higher power is better, the oil immersion best) will reveal the organisms. From

(Fig. 28) a fair idea of the form and arrangement of the gonococci can be had. It will be observed that the arrangement is in pairs, fours, etc., as opposed to chains, groups and clusters. It is the arrangement especially that is characteristic of the organisms.

#### Pathology.

An understanding of the pathology of gonorrhœa affords a rational explanation for the symptoms displayed by it. During the copulative act (usually) there is lodged in the male urethra in the neighborhood of the meatus a greater or lesser amount of the infectious material. The gonococci at once engage themselves, searching for food and preparing a place for residence and propagation. In accomplishing this their presence disturbs the normal nutrition of the part to an extent that there is a local congestion, the vessels becoming larger and their walls thinner, allowing an exudation of the white blood corpuscles. These organisms, after invading the epithelium of the mucous membrane, locate and attack the deeper connective tissue. It is due to the intrusive presence of these elements that there is congestion, followed by exudation, emigration and proliferation of the plastic elements of the parts. In this way the degenerated or necrosed white blood cells appear as a discharge of pus, carrying with it the infectious germ.

The prognosis in gonorrhœa should be guarded, and made favorable only when the patient has consented to live true to the advice and treatment that is indicated. Under such terms, I believe he can with reasonable security be promised a cure in from one to ten weeks; otherwise it would be difficult to forecast his future.

The incubative period of gonorrhœa is rather well fixed at five days, occasionally as short as two, rarely as late as ten.

The symptoms of gonorrhœa are measured by the parts involved and the resistance offered by the individual.

A train of symptoms common to the average attack, begins about the fifth day following exposure, with a tingling, itching sensation at the meatus and uneasiness upon passing water, this is soon succeeded by a smarting or burning pain. An inspection of the parts will now show a congestion of the meatus bathed in a slight serous discharge, the appearance of the meatus will soon deepen into an intense red, it will be puffed, everted and bathed with a heavy creamy discharge of pus. This inflammation starting at or near the meatus, proceeds slowly backward, steadily increasing in severity as it goes, for eight to twelve days, when the entire pendulous portion of the urethra is attacked; this period of the disease can well be called the **ADVANCING OR INCREASING STAGE**, it is now that the entire organ takes on a much disturbed appearance, the local sexual centers become aroused, and the disturbance maintains an activity of these nerves, rendering the nights sleepless on account of persistent and intensely painful erections, nocturnal emissions occur frequently and add to the distress. The mucous membrane of the urethra now loses its elasticity, the corpus spongiosum urethræ is filled with an exudate, preventing its expansion and elongation along with the corpora cavernosa during erection, eliciting pain and rendering that downward curving of the penis called Chordee. The lymphatic vessels may become inflamed, tender, and appear as whip-cords under the skin. The



lymphatic glands occasionally become enlarged and painful. *Arduor urinæ* (or painful urination) is now at its zenith, such a state is usually maintained for a week, which period is called the Stationary.

The symptoms will now begin to subside usually in an inverse order of their onset. The discharge becomes thinner, erections less painful, urination bearable until the morning drop of pus is the only evidence of the disease; usually two weeks are required until this decreasing or declining period is ended.

#### Posterior Gonorrhœa.

Should gonococci gain access to the urethra beyond the triangular ligament, all those important structures found in the prostatic urethra may become infected and there would be a posterior gonorrhœal urethritis. Every opening found here can become the seat of gonorrhœal disease, and from the nature of this situation it is readily seen how this disease can become responsible for prolonged and extensive suffering, and damage that may be permanent.

By this same process of invasion the disease can travel backward into the bladder, up the ureters and attack the kidneys; it may enter the ejaculatory ducts, invade the seminal vesicles, pass through the vasa-deferentia, epididymes and reach the testicles, lighting up in its progress an inflammation of the several parts invaded, and leaving in its wake damage proportionate to its severity. My experience is that once in five the disease passes beyond the pendulous urethra, that treatment promptly applied does much to limit its duration, its severity, and maintain it within safe bounds.

### Treatment of Gonorrhœa.

It has been shown that this disease has engaged the attention of medical men for many ages. During this time, there has been prepared an endless list of agents, presumed to be of service in its treatment. Many remedies have (for short periods) been looked upon as specifics and as many disappointments have followed. Each case then is to be prescribed for upon its merits. There should be no stereotyped prescriptions, no set plan.

Observance of sexual and urethral hygiene is always a conspicuous feature of any treatment. As previously indicated, gonorrhœa can be conveniently considered as possessing three stages, the Increasing, the Stationary and the Declining and rational treatment will be that which best meets these conditions.

### The Abortive Treatment.

Should a patient apply within twelve hours of the beginning of an attack of gonorrhœa, it is my rule to paint the meatus and the first one-half inch of the urethra with a twenty per cent solution of cocaine, introduce a short speculum (Fig. 29), with a camel's

FIG. 29.



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hair pencil, or cotton pledget, apply to the first one-half inch of the urethra a solution nitrate of silver (thirty grains to the ounce of distilled water), such an application may succeed by either washing away, or destroying the gonococci, or by substituting a violent simple, for a specific inflammation.

Should gonorrhœa continue after the subsidence of this inflammation it is well to abandon the hope of abortion. Prolonged and free daily irrigations of hot

FIG. 30.



Irrigation of the urethra.

1-10,000 bichloride of mercury solution, hot boracic acid solution, or a solution permanganate of potash, or zinc 1-3000 with a Kiefer nozzle, as illustrated by



Fig. 30, is recommended for abortion of gonorrhœa. With the permanganate solution I have had much satisfaction. I have aborted a very small percentage only, but often the inflammation has been so modified that the attack but slightly resembled the usual.

My experience with bichloride of mercury in various strengths, used either as an irrigation, or anterior hand injection, has been disappointing. I have not only failed to get satisfactory returns, but almost invariably I intensify the grade of inflammation; in other words, I know no more prompt and sure way of converting a mild gonorrhœa into a violent than to apply this drug in appreciable strengths.

When abortion of gonorrhœa fails, or when the case is one unsuited to that form of treatment, the systematic form of treatment is to be employed. The patient should first be impressed with the value of sexual and urethral hygiene and then instructed in the art of making an injection.

#### Urethral Injection and Irrigation.

Medication of the urethra, by means of the anterior hand injection, with what is known as a penis syringe

FIG. 31.



FIG. 32.



FIG. 33.



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or an irrigator, is an operation worthy of understanding. When an injection is prescribed for a patient, it is important that it be used correctly. No matter how

efficient the remedy may be, except it be intelligently applied it will fail to accomplish what is expected. Many times a discharge has continued unnecessarily when all else had been well done, and the injection wasted through improper application. The syringe itself should be prescribed. A size should be had that will comfortably fill the urethra, with a point that will snugly fit the meatus. Figs. 31, 32 and 33 represent instruments that meet these indications.

The urine should be voided, the syringe completely filled, the lips of the meatus separated, the point of the instrument inserted, and the contents gently discharged into the canal; there should be no leaking from the sides and no waste of the injection; when the syringe has been emptied it is slowly removed, making the meatus hug it closely, and still not a drop of the injection is permitted to escape; the injection is retained, with this slight lateral pressure, for a few seconds and is then allowed to escape slowly.

Irrigations are made in a variety of ways. Fig. 30 illustrates a very convenient method, showing the application of the Kiefer nozzle. By placing the finger over the outflow arm for an instant the urethra may be stretched and irrigated at the same time.

During the advancing stage of gonorrhœa, it is the custom of many to withhold all local treatment. It is claimed that prior to the declining period (or rather, so long as the trouble appears acute) injections are a disadvantage; this class recommend injections and local measures late in the disease. There are those, too, who take a more extreme view and believe the disease to be strictly self-limited and do but little in a direct way toward treatment. The basis for the belief in these positions is anything but scientific, nor are



such fancies strengthened by the results of this practice; my patients have certainly done better with treatment than without and have done better when local measures have been prescribed. I have labored in this field without favor or prejudice, with but one end in view, and at this moment I am convinced most positively of this fact. If the situation of the patient will allow, irrigation of the parts with a permanganate, or some other suitable solution, three times a day, this will meet all requirements so far as local medication is concerned, otherwise the hand injection will be necessary. No injection should be continued when intense burning or pain is produced by it, or when from its irritating nature the disease is aggravated; and no injection should be dropped when comfort and disappearance of symptoms attend its use. The strength of an injection should be determined by its effect. There is a belief that prevails extensively, especially in the minds of the laity, that it is injurious to allay inflammation too suddenly, or cure a clap too quick. This, of course, is erroneous. A solution in one situation may not be applicable in another. Not that there is difference in the remedies used or the character of the disease to be treated, but on account of the difference in individuals. A remedy that will produce a distinct sensation of warmth, without burning, is desirable. Weaker solutions are indicated in the advancing stage, than in the stationary or declining. Antiseptics and astringents are the remedies used in injections. It is bad surgery to fly from one prescription to another or to be continually modifying the plan of treatment without especial reason. It shows a lack of confidence in one's ability and is demoralizing to the patient. Should the plan of treatment selected for the increasing



stage modify its severity and shorten this period, the same plan will be servicable during the stationary; and should this period in turn be shortened, the same plan should be continued into the decreasing period and on, until the disease is terminated. A clap should be treated for at least ten days after the disappearance of every symptom. I have many times recommended, upon the cessation of all symptoms, the continuance of the treatment as before, except when a syringefull of the medicine has been taken from the bottle, add to the bottle a like quantity of water.

The prescriptions here presented are for the most part those that have been well tested and approved. Many of the novelties are not mentioned.

## No. 16.

R.—Zinci permangan.....gr. iiii.  
Aqua destillata .....℥vi.  
M. ft. sol.  
S.—Inject three times daily.

## No. 17.

R.—Zinci sulph .....℥ss.  
Ext. hydrast. fld .....℥liiii.  
Aqua destillata .....℥viiss.  
M. ft. sol.  
S.—Inject three times a day.

## No. 18.

R.—Liq. sodæ chloratæ.....℥ss.  
Aqua destillata .....℥vss.  
M.  
S.—Inject three times a day.

## No. 19.

R.—Bismuthi subnit .....℥i.  
Acidum boricum.....gr. xl.  
Cocainæ muriat .....gr. vi.  
Aqua rosæ.....℥iv.  
M. ft. lot.  
S.—Inject four to six times daily. (Useful in the early and highly inflamed state of urethral disease.)

## No. 20.

R.—Liq. plumb. subacet.℥iii.  
Ext. opii aquos .....gr. x.  
Aqua camphoræ..... } aa ℥ii.  
Aqua destillata ..... }  
M.  
S.—Inject three or four times a day. (A mild injection.)

## No. 21.

℞.—Zinci sulpho carbolat. .... gr. x.  
 Ext. pinus cann. (color-  
 less) ..... ℥ss.  
 Aqua destillata ..... ℥vss.  
 M.  
 S.—Inject three times a day.

## No. 22.

℞.—Zinci sulph ..... }  
 Plumb. acetat. .... } aa ʒi.  
 Alumen exsiccet ..... }  
 Mucilago acacim ..... ℥ss.  
 Tr. catechu ..... ℥iii.  
 Aqua destillata, q.s. fl. ℥viii.  
 M.  
 S.—Inject three times daily.

## No. 23.

℞.—Acidum carbohcum ..... ℥xx.  
 Glycerinum ..... ℥ss.  
 Aqua destillata ..... ℥vss.  
 M.  
 S.—Inject three times daily.

## No. 24.

℞.—Argenti nitras ..... gr. i.  
 Aqua destillata ..... ℥vi.  
 M. ft. sol.  
 S.—Inject three times a day.

## No. 25.

℞.—Argonin ..... gr. 5-50  
 Aqua destillata ..... ℥iv.  
 M. ft. sol. (by heat).  
 S.—Inject three times a day. This remedy (a silver salt) is, perhaps, at this moment the most extolled. I have had much satisfaction from its use early in gonorrhœa.

To even mention in this connection the many remedies that have been used as injections in the treatment of gonorrhœa would be (figuratively speaking) to incorporate the materia medica in the text. The list that I have submitted, however, will be found sufficiently complete for the prescriber's purpose. The newer remedies that are included are those that I have used, though in some instances to a limited extent.

The first list will include those agents that have long been prominent as anterior injections.

The second list will embrace the newer remedies that may be used in the same manner.

The third will be those substances recommended for irrigation or retrojection.

The fourth will be such as may be used in ointment or suppository form.

The fifth will be the usual remedies for deep or posterior urethral medication.

LIST No. 1.

STAPLE REMEDIES.

Boric acid, 5 to 10 grains to the ounce of water.  
 Carbolic acid, 1 to 5 minims to the ounce of water.  
 Tannic acid, 2 to 5 grains to the ounce of water.  
 Alum, dried, 2 to 5 grains to the ounce of water.  
 Silver, nitrate,  $\frac{1}{8}$  to 1 grain to the ounce of water.  
 Bismuth, sub nitrate, 5 to 20 grains to the ounce of water.  
 Sol. chlorinated soda,  $\frac{1}{2}$  to 2 drams to the ounce of water.  
 Creosote, 1 to 5 minims to the ounce of water.  
 Sulphate of copper,  $\frac{1}{8}$  to 1 grain to the ounce of water.  
 Fl. ex. ergot,  $\frac{1}{4}$  to 1 dram to the ounce of water.  
 Fl. ex. krameria,  $\frac{1}{4}$  to 1 dram to the ounce of water.  
 Fl. ex. hydrastis,  $\frac{1}{2}$  to 2 drams to the ounce of water.  
 Fl. ex. hamamelis,  $\frac{1}{4}$  to 1 dram to the ounce of water.  
 Fl. ex. nutgall,  $\frac{1}{4}$  to  $\frac{1}{2}$  dram to the ounce of water.  
 Bichloride of mercury,  $\frac{1}{8}$  to  $\frac{1}{2}$  grain to the ounce of water.  
 Tr. kino,  $\frac{1}{4}$  to 1 dram to the ounce of water.  
 Sol. subacetate of lead, diluted.  
 Ext. of opium, aqueous, 1 to 5 grains to the ounce of water.  
 Acetate of lead, 1 to 5 grains to the ounce of water.  
 Potassium, chlorate,  $\frac{1}{2}$  to 3 grains to the ounce of water.  
 Potassium, permanganate,  $\frac{1}{2}$  to 2 grains to the ounce of water.  
 Sodium, chloride, 1 to 10 grains to the ounce of water.  
 Zinc, chloride,  $\frac{1}{30}$  to  $\frac{1}{5}$  grain to the ounce of water.  
 Zinc, sulphate, 1 to 5 grains to the ounce of water.  
 Zinc, acetate, 1 to 5 grains to the ounce of water.  
 Zinc, sulphocarbolate, 1 to 5 grains to the ounce of water.  
 Iodoform, 5 to 30 grains to the ounce of water.

LIST No. 2.

NEWER REMEDIES USEFUL IN GONORRHOEA IN THE FORM OF INJECTION.

AUTHOR'S ESTIMATE.

Antipyrine, 5 to 10 grains to the ounce of water.	{ Is a very inferior application.
Alumnol, 3 to 10 grains to the ounce of water.	{ A useful remedy, but falls short of the extravagant claims made for it.
Gallobromol, 2 to 10 grains to the ounce of water.	{ An excellent remedy in the early period of gonorrhœa.
Dermatol, 2 to 5 grains in mucilage of acacia.	{ Used in two cases only; its more extended use was not warranted by its action.

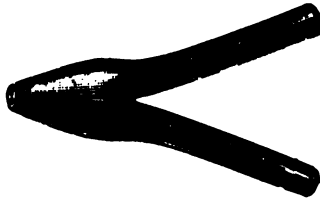


- |   |   |   |
|---|---|---|
| Creoline, 2 to 8 grains to the ounce of water.                          | { | Is very similar in action to carbolic acid; a limited use places it on a parity with it.  |
| Lysol, 2 to 8 grains to the ounce of water.                             | { | Used in twenty cases, results inferior to permanganate of potash.                         |
| Ichthyol, 3 to 20 grains to the ounce of water.                         | { | Is very satisfactory; have found it to be superior in some cases to all other injections. |
| Thallin, sulphate, 3 to 10 grains to the ounce of water.                | { | Is worthy of a place.   |
| Pyoktanin, $\frac{1}{10}$ to $\frac{1}{3}$ grain to the ounce of water. | { | Seemed to be of service; a more extensive use is necessary for an opinion.                |
| Sozoidol of zinc, 3 to 12 grains to the ounce of water.                 | { | Much the same as the sulphate.  |
| • Pyridin, $\frac{1}{4}$ to $\frac{3}{4}$ grain to the ounce of water.  | { | Often has a pronounced effect; at times, however, it fails completely.                    |

## LIST No. 3.

## IRRIGATIONS AND RETROJECTIONS.

FIG. 34.



Kiefer nozzle.

FIG. 35.



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Mitchell's soft rubber retrojector.

To be used with the Kiefer nozzle, Fig. 34; or with Mitchell's soft rubber retrojector, Fig. 35.

1. Hot bichloride of mercury, solution 1:20000 or 1:50000. The temperature of the solution at first should be 100° F., gradually raised until the heat is complained of; at least half a gallon should be used at each sitting, which may be once a day.

2. Permanganate of potash or zinc, in strengths varying from 1:500 to 1:5000, may be used in the same manner.

3. Nitrate of silver, in strength of 1:20000 to 1:50000.

4. The other drugs are alumnol, sulph. of zinc, solution chlorinated soda—all well diluted.

LIST No. 4.

SUCH REMEDIES AS MAY BE USED AS OINTMENTS OR SUPPOSITORIES  
IN THE URETHRA.

FIG. 36.



Cupped sound.

FIG. 37.



BLEES-MOORE INSTRUMENT CO.

Lewis' applicator.

Ointments are applied with various devices. The cupped sound, Fig. 36, is one of the oldest and best. The ointment is rubbed into the cups and the instrument, thus armed with medicine, is introduced in the usual manner. Useful in this department is Lewis' applicator, Fig. 37.

The base for ointments is lanolin, vaseline or benzoated lard. The base for suppositories is cacao-butter; and the base for urethral bougies (or antrophores) is gelatin. Iodoform, camphor, tannic acid, bismuth, sulphate of zinc, opium, boric acid, acetate of lead, nitrate of silver, powdered golden-seal; in fact, most any powdered drug that may be indicated can be used.

LIST No. 5.

PROPER REMEDIES FOR POSTERIOR URETHRITIS.

FIG. 38.



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Keyes' deep urethral syringe.

The deep urethra frequently demands local treatment; liquid applications are made with the deep urethral syringe, Fig. 38; one or more drops

as indicated, being applied to the diseased area once every third day, or oftener if necessary.

Nitrate of silver, 5 to 30 grains to the ounce of water, is used oftener than any other agent.

Sulphate of copper, 5 to 20 grains to the ounce of water.

Sulphate of thallin, 5 to 20 grains to the ounce of water.

Ichthyol, 5 to 50 grains to the ounce of water.

Gallobromol, 5 to 10 grains to the ounce of water.

In the internal treatment of gonorrhœa the drugs known as anti-blennorrhagics are made use of. The use of balsam of copaiba is almost universal; it has played a conspicuous part in the treatment of gonorrhœa many years, and is to-day highly esteemed. The flavor of this drug to many is intolerable; it is indigestible and inelegant; it is frequently responsible for gastric distress, diarrhœa, headache, dizziness, pain in the kidneys and a rash that resembles the eruptive fevers, therefore its use should be watched and the dose guarded. What has been said of balsam of copaiba can be said of the oil of sandal-wood and the oil of cubebs, except there is no rash and less kidney irritation with these latter. Cubebs may be employed in one of several forms (the powdered berries, the fluid extract, the tincture, etc.); it is especially serviceable in the late period of gonorrhœa.

Several very reputable pharmaceutical houses are preparing capsules of these three remedies, that in point of convenience have special claims. At times a combination of them seems to act better than when given singly. Turpentine may be cautiously prescribed in the late stage of the disease, one or two drops given three times daily. Tr. cantharides in doses of one to three drops acts favorably in the late period also. Rxs. 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36 and 37, will afford an idea of construction.



## No. 26.

R —Bals. capivi ..... ʒss  
 Pulv. acacia ..... ʒii  
 Ext. potass ..... ʒss  
 O. menth. pur. .... grs. x  
 Ext. panderac. liq. .... ʒi  
 Symplic. .... ʒss  
 M. ft. emul.  
 S.—A teaspoonful in water  
 after each meal.

## No. 27.

R —O. cubebæ ..... ʒss.  
 Pulv. acacia ..... ʒii.  
 Aqua pur. .... ʒss.  
 Syr. stramon. comp. .... ʒss.  
 M. ft. emul.  
 S.—A teaspoonful in water  
 after each meal.

## No. 30.

R —Salol ..... ʒi.  
 Ext. belladon. pulv. gr. iii.  
 Camph. monobrom. gr. xii.  
 M. ft. chart. No. xii.  
 S.—One every four hours in  
 water, to render the urine  
 sterile and free from bacteria.

## No. 32.

R.—Ext. kava kava fld. .... ʒii.  
 Acidum benzoicum ..... ʒii.  
 M.  
 S.—Half a teaspoonful in a  
 wineglassful of water after  
 each meal.

## No. 28.

R —O. santa ..... ʒss  
 Pulv. acacia ..... ʒii.  
 O. cinnam. .... ʒss  
 Aqua pur. .... ʒss  
 M. ft. emul.  
 S.—A teaspoonful in water  
 after each meal.

## No. 29.

R.—Potass. brom. .... ʒii.  
 Tr. acacia ..... ʒss  
 Ext. hyoscyam. fld. ʒi  
 Liq. potass. ext. ʒvi  
 M. ft. sol.  
 S.—A teaspoonful in water  
 every two or three hours for  
 irritation of bladder and pain-  
 ful miction.

## No. 31.

R —Tr. verat. viridi ..... ʒviii.  
 Sodii brom. .... ʒi.  
 Potassii bicarb. .... ʒi  
 Aqua cinnam. .... ʒviii.  
 M. ft. sol.  
 S.—A tablespoonful three  
 or four times a day, to over-  
 come excess of acid in urine,  
 etc.

## No. 33.

R.—Tr. cantharid. .... ʒviii.  
 Tr. cubebæ ..... ʒi  
 Tr. hyoscyam. .... ʒss.  
 Fl. ext. casearia ar. ʒi  
 M.  
 S.—A teaspoonful in water  
 after meals for frequent and  
 painful urination.

## No. 34.

R.—Thyroid extract ..... gr. xxx.  
 Ft. caps. No. xv.  
 S.—One capsule four times daily. A useful remedy in increasing resistance of the tissues, thereby limiting the spread of gonorrhœa.

## No. 36.

R.—Guaiacol..... ℥xxxii.  
 Acidum salicylicum. gr. xxxii.  
 Glycerinum..... ℥i.  
 Elix. cinchona..... ℥iii.  
 M. ft. sol.  
 S.—A teaspoonful in water four times a day. Useful in all inflammatory conditions of the urinary organs.

## No. 35.

R.—Protonuclein ..... gr. xxxvi.  
 Ft. caps. No. xii.  
 S.—One capsule four to six times a day, for the same purpose as No. 34.

## No. 37.

R.—Guaiacol ..... ℥xx.  
 Hydrastine..... gr. xxv.  
 Aqua destillata..... ℥viii.  
 M. ft. sol.  
 S.—Inject three or four times daily.

Rubber bags, sold as gonorrhœal bags, and all wrappings of the penis during a gonorrhœa are injurious. The custom of applying cotton to the meatus for the purpose of collecting the discharge is bad; (the first drop of pus cements the cotton to the meatus, its outer surface forms a crust and acts as a dam.) Free drainage is important, therefore a handkerchief, worn as an apron, or some similar dressing that will not retard the outflow of the discharge is desirable.

There is much in connection with this disease and its proper management that is unfortunate. It is a rule that such patients are either young men, living at home, or married men; in either instance they are forced to take such care of themselves as surroundings will admit. They do not make known their condition for fear of consequences. The medical attendant in these situations is forced to direct a treatment under great disadvantages. The first attack of gonorrhœa is usually the severest, and is the surest to disappear completely.

**Gleet.**

With the usual termination of an attack of gonorrhœa is a mucoid discharge. The mere presence of this viscid material in the urethra, whether it be due to one cause or another, constitutes the condition known as gleet. There is an underlying cause for this symptom which may be a catarrhal state following gonorrhœa, a congested spot or spots in the canal, an ulcer, stricture, etc. At all events a gleet is an indication of a chronic state, and the discharge (which may be the only evidence), is usually slow to disappear. Astringent injections and irrigations benefit the condition, and if the lesion be within the reach of such applications, often gleet is cured. This stage of urethral trouble appears at a time when the patient is eager to be discharged; he is, therefore, restless, impatient and rebellious. This disposition on the part of the patient often induces the sympathetic physician to overtreat the case and the discharge is often the outgrowth of such jealousy.

In the face of a stubborn discharge, taxing one's ingenuity on one hand, and a distracted and unreasonable patient continually seeking a change of medicine upon the other, the attendant, (except he be of tranquil turn) is liable to err in this direction.

Should such a discharge persist after diligent treatment for a period of two or three weeks, it is well to discontinue all local treatment for a time and observe the behavior. Should the trouble continue unchanged without local treatment, permit it to rest for about two additional weeks. Should the inflammation increase, return to the treatment. After the disappearance of gonococci from the discharge, it will be proper to search for the cause, which, when found, may be



treated as an ulcer, or as a stricture; it will then be that the discharge will cease and the attack brought to an end. When it is impossible to locate the lesion, as is frequently the case, the use of the cold sound every third or fourth day may be responsible for a cure. Should the lesion be in the deep urethra, two to five drops of tannate of glycerine, two to five drops of a solution of sulphate of copper (ten grains to the ounce of water), two to five drops of a solution of nitrate of silver (three to five grains to the ounce of water) applied with a deep urethral syringe to the lesion, will be beneficial.

The greatest care should be exercised in manipulations here when the discharge contains pus. Usually urethral trouble of this nature is confined to those accustomed to the exercise of their genitals. I believe that the congested condition, incident to unaccustomed continence, is injurious. Sexual hygiene, under such circumstances, is a thing impossible; I, therefore, recommend copulation after the disappearance of the gonococci, and believe the condition is more amenable thereafter.

In the treatment of gleet I have used iodoform, dry and in suppositories, boric acid, bismuth subnitrate, etc. The suppositories are irritating and inferior to injections. It is generally recommended in the treatment of most urethral inflammations to render the urine slightly alkaline by the administration of some antacid like soda bicarbonate (fifteen to thirty grains), potash citrate (fifteen to twenty grains), soda benzoate (five to ten grains), etc. I prescribe such a remedy only when the urine is abnormally acid, and then in such quantities as will bring the acidity down to normal.

Should the urine become alkaline I render it nor-

mally acid, for the reason that the urethra tolerates best, and is at ease when it is subjected to contact with normal urine. I am convinced that in diseases of the stomach, bowels and like organs, their function is best performed, and in disease they assume a normal state soonest when their environment is normal. Normal urine then is distinctly healing to a diseased urethra and for that reason alkalinity is undesirable, again Finger first called attention to the fact that the gonococci flourished in alkaline discharge.

#### **Relapsing Gonorrhœa.**

Attacks of gonorrhœa frequently pursue a more or less regular order for a given period, the treatment prescribed may appear in every way equal to the condition, the discharge may disappear and the cure seem complete, several days after the abandonment of the treatment, the discharge may reappear, gonococci may be found and all the symptoms of gonorrhœa develop. Treatment now instituted may very soon return the parts to a state of relative health, when under like conditions another relapse will follow. It will be found that the urethra has been restored to normal except in one or more restricted areas, which latter may be an ulcer, an abscess of small size, an irregular space behind a stricture or any condition that will harbor the gonococci and prevent their elimination or destruction. These micro-organisms thus protected, begin active work upon the cessation of the treatment, they encroach upon and invade new parts, and evoke a fresh attack in a way but little different from the original. Such conditions can be successfully managed by reducing the disease to these hiding places, locate these secret retreats with a bulbous

sound, or an endoscope and make direct application of a substantial solution nit. of silver (one drop of a twenty gr. to oz. sol.) Sounds may be used in overcoming these irregularities of the canal in a way that injections and irrigations may reach the focus of infection. Care should be exercised that such instruments do not pass beyond the lesion and infect deeper structures.



## CHAPTER V.

COMPLICATIONS OF GONORRHOEA — POST-GONORRHOEAL NEU-  
ROSES, LYMPHANGITIS, ADENITIS, ABSCESSSES OF THE  
URETHRAL FOLLICLES, PERI-URETHRAL INFLAMMA-  
TION, COWPERITIS, PROSTATITIS, SEMINAL VESI-  
CULITIS, EPIDIDYMITIS, ORCHITIS, EPIDIDYMO-  
ORCHITIS, DEFERENTITIS, CYSTITIS, URE-  
TERITIS, PYELITIS, CONJUNCTIVITIS,  
GONORRHOEAL RHEUMATISM.

An attack of gonorrhœa may run a regular course and the patient recover. The attack may have been mild and short throughout, and yet there may develop a neuralgia of the penis, testicle or other parts of the genitals that may be paroxysmal and severe; constant, or vague and indefinite. The pain may originate in the testicle, pass rapidly up the cord and on to the glans-penis. There may be nothing visible, nothing to determine the cause of such pain except the statement of the sufferer that he has suffered a recent attack of gonorrhœa. Micturition and erection of the penis may be painful, there may be bladder irritation; such a neuralgic state may persist and become the source of much worry and depression.

In the absence of a visible cause the treatment should embrace a change of scene and circumstance, recreation and diversity, such tonics as will insure general improvement. The bromides, iron, arsenic, cannabis indica, gold, and assafœtida may be used.

### **Lymphangitis.**

In the presence of a long fore-skin, gonorrhœal or other forms of inflammation in this situation very often induce

an œdematous, boggy condition of the loose tissue of the prepuce (Fig. 39); this state is due to septic matter acting upon the superficial lymphatics, attended by an infiltration

FIG. 39.



Lymphangitis complicating Gonorrhœa.

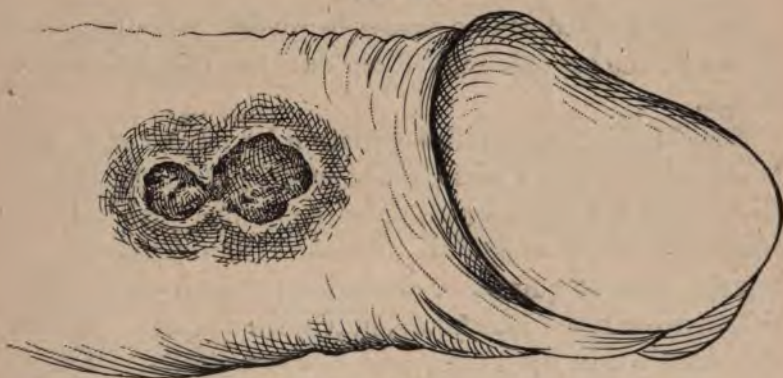
of the parts, and is vulgarly called BULL-HEADED CLAP. Such disturbance may be so slight as will only attract notice; there may be no pain or inconvenience, or so extensive as



to cause great deformity of the part, predisposing to phimosis; fever may run rather high and the general appearance resemble an attack of erysipelas.

The main lymphatic trunks may, in a like manner, become infected; they will display a sense of hardness throughout their inflamed portions, become several times their natural size and not be the seat of much pain. Those instances where the structures about the vessels become involved, giving rise to a peri-lymphangitis, there is pain on pressure, red lines are noticed, marking the course of the inflammation. These inflamed vessels, made so in this connection on account of the absorption of gonorrhoeal products, may develop abscesses in their course

FIG. 40.



Abscess resulting from Inflammation of Lymphatics.

(Fig. 40), or conduct sufficient material to the near-by lymphatic glands to cause their inflammation. Such an adenitis is usually not severe; suppuration is not to be expected except the general health is poor. Should suppuration occur, it is claimed by good authority that the pus is not auto-inoculable. This, I am quite positive, is not invariably correct. I have found gonococci here which, when planted upon the conjunctiva of a rabbit,



gave positive results. When the gonorrhœal element acts by disturbing a tuberculous process, and the breaking down is one other than gonorrhœal, then one is safe in the premises, i. e., the pus is not capable of transmitting gonorrhœa.

The treatment of the mild types of lymphangitis will consist in thorough cleanliness and the application of astringents.

Rxs. Nos. 38 and 39 may be used:

No. 38.	No. 39.
℞.—Plumb. acet ..... ʒiss.	℞.—Unguent. zinci, ox. benz....ʒi.
Ext. opii. aq.....gr. vi.	Acidum tannicum.....ʒi.
Aqua destillata.....ʒvi.	M. ft. unguent.
M. ft. lot.	S.—Apply twice a day.
S.—Apply on cloths or gauze three times a day.	

Should the œdema be excessive several punctures can be made, the exudate milked out and the part treated as above.

Should the grade of inflammation be severer still, and there be fever and a peri-lymphangitis, put the patient to bed, apply hot compresses, open the bowels with sol. cit. magnesia, sulph. magnesia, or some saline cathartic. A few full doses of quinine or acetanilid for the fever, tr. iron, fifteen drops every four hours, nutritious diet, etc. Should abscesses occur, open early and treat surgically. It happens at times that an extensive slough is the outcome of this disturbance, and any treatment prescribed should guard against such an end. Should the lymphatic glands give evidence of suppuration, take the patient off his feet, apply compresses, tr. iodine, ichthyol, and, if necessary, inject into the gland fifteen drops of pure carbolic acid.

#### Abscesses of the Urethral Follicles.

It has been shown that the surface of the urethra is liberally studded with openings of larger or smaller propor-

tions, in the anterior and in the prostatic portions these crypts are especially abundant. During an attack of gonorrhœa it happens that septic matter finds its way into these orifices and complicates the situation by the development of abscesses. When the smaller mucous follicles become the seat of such disease it may pass unnoticed, the only feature may be a slight induration, and the pus may form, and escape through the urethra, giving rise to slight pain and tenderness. The urethral orifice of these glands may become closed and the pointing of the abscess may be upon the outside; it is then the infectious element invades the peri-glandular tissue and may give rise to extensive destruction of the parts, leaving behind unsightly deformity. Under such circumstances this communication of the urethra with the deeper structures may lead to extravasation of urine and a slough result, or it might leave behind a fistulous tract, or stricture. The importance of such a complication will be measured by the size, situation and extent of abscess formation. It matters little which opening or gland is involved, the pathology is the same and the treatment should be directed to meet individual conditions.

Should the lacuna magna participate in such inflammation little difficulty is offered; being within easy reach, the part may be incised and applications can be made that will promptly restore it. The deeper parts may be cared for by making an application of pure carbolic acid, through a speculum or endoscope, or with a deep urethral syringe; should such inflammation develop, and pronounced inflammation and induration with evidence of suppuration arise, the area may be cocaineized and the tumor freely opened, curetted, packed and the part permitted to heal; in fact this is the treatment for this condition; by so doing you many times will obviate reinfection of the urethra, and



the subsequent development of fistula. Should Cowpers glands become inflamed the condition is called Cowperitis. Here, as with other glands, the one involved may or may not go on to suppuration, the symptoms will be proportionate. Should the gland attain an undue size, become painful, pus is surely present, and the situation demands incision and surgical care. The importance of these two glands is such that calls for active and positive treatment. Everything should be done to prevent abscess formation and destruction; rest, leeches, cold compresses, etc., should be employed.

Abscesses resulting from invasion of the peri-urethral structures by the gonococci, if situated near the bulb of the urethra, demand the closest attention. The first evidence of infiltration of urine calls for external urethrotomy.

Diseases of the prostate incident to posterior gonorrhœal infection will be considered in the chapter that follows.

#### **Seminal Vesiculitis.**

Inflammation of the seminal vesicles is the result of infectious elements gaining access to these parts; here, too, gonorrhœa holds first rank as an etiological factor. Like most inflammatory diseases of the genitals, any unclean material finding its way into such parts, disturbs the nutrition to an extent that a pathologic state results; thus, infectious matter from contiguous regions, from instruments, medicines, congestion incident to sexual excess, masturbation, traumatism, constipation, etc., are given as causes. There can be no doubt to-day that many cases of this kind have been misinterpreted, for our knowledge of this disease has remained very incomplete prior to the recent work of Mr. Jordan Loyd.

Inflammation of these organs are associated with similar processes of the deep urethra and epididymis; when it ap-



pears as a complication of gonorrhœa it is developed late in the course of such disease, usually between the third and sixth weeks.

#### **Symptoms.**

Rarely are both vesicles involved. Two forms of this inflammation are recognized, acute and chronic. In the acute variety the characteristics are much more pronounced; pain either of a continuous or throbbing kind is the most constant and pronounced symptom. This is often referred to the neck of the bladder, rectum or pelvic region; it is difficult to locate and describe. The patient will suffer from irritability of the bladder; the bowels, when constipated, act with much difficulty.

When the rectum is loaded with feces and the bladder full, there is undue pressure upon the part, and increased discomfort results. The usual reflex neuralgias are present, suppuration is rare; when pus is forming or present the above symptoms, together with chills, fever, nausea, headache, etc., will be present.

The onset and development of this condition, with such a train of symptoms will be rather rapid in the acute type, while in the chronic there may be some of the above features wanting, or all may exist in a milder and modified way.

#### **Diagnosis.**

Posterior urethritis, cystitis and prostatic diseases offer many symptoms in common with disease of this part, differentiation is often impossible. Through the rectum alone can these organs be reached and then only when everything is favorable. Should the prostate be appreciably enlarged in its antero-posterior direction it is exceedingly difficult to palpate the vesicles. The bladder should be well filled with some appropriate solution, the

patient placed in the lithotomy position, the index finger anointed and the vesicles outlined; pressure upon the distended bladder will greatly facilitate the examination. If diseased, the vesicles will be found full, doughy and painful upon pressure. Stripping may result in their contents being expelled into the urethra, and the first portion of water voided may show the nature of their contents, which may be blood or pus.

#### **Prognosis.**

Occlusion of the ejaculatory ducts may follow inflammation of these organs, or some part of the loops may become closed, therefore it is hardly justifiable to treat the matter lightly. Again, I know of no condition more uncertain and rebellious to treatment. I believe most cases recover; all do not, I am sure.

#### **Treatment.**

There is little in the treatment, as we know it, that is direct. Removal of the cause, if such be possible, is indicated. Sexual and urethral hygiene is important. Pain should be controlled by the usual remedies; the bowels looked to. Hot water injections act kindly. Much stress is attached by Dr. Fuller to milking the vesicles, and I am quite positive that massage, when it can be applied properly, is most serviceable. I am not inclined to consider it as easy of application, however, as it appears. Much practice is essential to its correct performance.

Here, as elsewhere in this region, the mental and nervous systems are often much influenced. I have several times been alarmed at the depressed state of spirits that has developed on this account. Much tact, patience and skill are often required to meet the wishes of such a patient. I have used galvanism upon the parts with satisfaction; the cold douche is grateful. Should pus form the



tumor can be aspirated through the rectum; counter irritations to the perineum, leeches, etc., may be beneficial. The following prescriptions internally may be tried. Rxs. 40 and 41:

## No. 40.

Rx.—Sodii salicyl.....℥iii.  
 Liq. potass arsen.....℥iss.  
 Peps. cord. P. D. & Co.℥iii.  
 Ex. cascara aromat. fld.℥i.  
 M. ft. sol.  
 S.—A teaspoonful in water  
 every four hours.

## No. 41.

Rx.—Camph. mono. brom.gr. xl.  
 Ex. hyocyam pulv }  
 Ex. cann. ind. } aa. gr. iv.  
 pulv.....}  
 Ex. cascara sag.....gr. xx.  
 M. ft. caps No. XX.  
 S.—One four times daily.

**Epididymitis.**

Epididymitis, or swelled testicle, is an inflammation of the epididymis. It is one of the frequent and painful complications of gonorrhœa. It usually announces itself during the third or fourth week of the disease and complicates about five to ten per cent. of such cases. Other micro-organisms may become responsible for such inflammation, and traumatism can produce it. Stricture of the urethra and all conditions favoring deep urethral and bladder trouble predispose to it. The same is true of irritating and caustic injections, and unclean urethral instruments. The weak, debilitated, and those given to excesses do not seem to develop this complication more readily than the robust and temperate. Quite ninety-five per cent. of the author's cases of epididymitis have developed it as a complication of gonorrhœa.

The left epididymis is attacked more frequently than the right, rarely are both involved. There is more or less inflammation of the tunica vaginalis, which latter gives rise to over-secretion and under-absorption of its serous exudate; hence hydrocele, more or less pronounced, is encountered in the majority of such instances. The infectious materials may pass beyond the epididymis and the



testicle proper become inflamed, constituting orchitis. This complication, however, is relatively rare. Two distinct types of the disease are [noted, acute and chronic, each determined by the character of the infecting element, the condition of the patient generally, and the resisting powers or integrity of the part itself.

FIG. 41.



Lymphangitis and Epididymitis complicating Gonorrhœa.

The proper conduct of the patient, and the timely use of appropriate treatment does much toward preventing this complication, and modifying its severity when in existence.

It is advanced by some that reflex irritation can be responsible for epididymitis, also that the infecting element is transported by way of the lymphatics to the epididymis.

It is believed also that the element may proceed through the genital tract to the epididymis, and there light up inflammation, and yet no discoverable disease will be found in the parts through which this element has passed. I quite agree that epididymitis is occasionally diagnosed when there is but little else in the case except an ordinary gonorrhœa; the more painstaking one becomes in his examinations the oftener disease of the deep urethra, seminal vesicles, vas deferens and ducts will be found, and while the time is not at hand to deny the possibility of infection through the lymphatic circulation, yet the most rational explanation of the access of these matters to this part is inflammation through contiguity of tissue.

#### Symptoms.

A patient with epididymitis will complain of having an attack of gonorrhœa that is disposed to linger. It may or may not have been severe, perhaps one of the relapsing kind. The discharge may have disappeared, except the morning drop, a slight febrile state is noticed, malaise, headache, loss of appetite, etc. There will be neuralgic disturbances in the back, inguinal region, and spermatic cord. The weight of the testicle drags heavily upon the cord. In the greater number of such cases the deep urethra is diseased and will add to the above prodromal symptoms (heaviness in the rectum, irritability of the bladder), etc. From one to four days of such disturbance and signs of positive inflammation in the epididymis is noticed; the globus minor is first attacked. There will be pain, heat and swelling, which condition is very soon noticed throughout this entire organ, which will rapidly increase to several times its normal size and present its characteristic crescent shape, occupying the posterior aspect of the testicle. Within four or five days the disease



attains its zenith, when all subjective symptoms are most marked. For a day or two there is little change, after which resolution begins. The symptoms gradually fade in favorable cases, and recovery is practically complete in ten days. When the tunica vaginalis participates and there is distinct accumulation of fluid within its two surfaces, the scrotum becomes so enlarged and tense, that it is difficult or impossible to outline the epididymis or the testicle. The tumor then seems one solid mass (except diligence in the examination be observed). Fluctuation can usually be made out. This additional increase in size (on account of the acute hydrocele) adds both to the severity of the symptoms and duration of the attack.

#### **Epididymo-Orchitis.**

Should the infectious material pass beyond the epididymis and in any manner invade the testicle proper, a like inflammatory process of this organ will result, and another, and more serious complication arises.

The inflammation of these two parts is called epididymo-orchitis. The tunica albuginea, or investing membrane of the testicle, is quite inelastic, and as the organ begins its congestive stage, and this increase of pressure advances, there is corresponding pain, which at times, is so severe that heroic measures are necessary for relief. The pain in this region is especially unbearable; there is, in addition to the pain, a peculiar sickening ache that is nowhere else found. Such a complication as there would now be predisposes to disturbances in the scrotum, the connective tissue becomes infiltrated and thick, dropical and red (Fig. 41). Fever may run high, there may be chills, nausea and vomiting, a dry tongue, restlessness and occasional delirium. The spermatic cord is, in turn, inflamed, tender and enlarged throughout its entire distance.



Such is a description of an average attack of epididymitis and adjacent inflammation, from which it will be learned that this disease may be so mild as not to give rise to much suffering or inconvenience, or it may be so severe and so complicated as to constitute a severe and serious condition.

The chronic form of epididymitis is the result of chronic conditions, or is that low form of disease following an acute attack. Unclean matter associated with urethral stricture, chronic non-specific lesions of the urethra, and low vitality from various causes are responsible for this chronic form of inflammation of the epididymis.

The symptoms in such cases are less pronounced, the progress less rapid, both as regards its onset and its decline. When the epididymis takes on inflammation due to the existence of gonorrhœa, it is usual to note a cessation of urethral discharge, and when the inflammation in the epididymis abates the discharge reappears.

#### **Prognosis.**

While an ordinary attack of epididymitis runs its course (mild or severe), as the case may be, and the parts appear in their usual health, it would seem that the favorable prognosis, that is so universally agreed upon, is proper, yet I am convinced that this disease is of much greater moment than many believe. There is almost invariably a high grade inflammation of that long, convoluted tube that constitutes the epididymis, and the vas deferens, and often the hard irregular places left after an attack of epididymitis are occlusions of the canal; therefore I am forced to believe that sterility is often due to such inflammation.

It is a wise and fortunate provision of nature that there are two testes, and fortunate, too, that both are involved so rarely.

### Diagnosis.

The etiology of epididymitis is so constant, the symptoms so pronounced, the location and appearance of this body when inflamed so characteristic that there is little room for an error in diagnosis. In those very rare instances, where a testicle has continued undescended, being retained within the abdominal cavity or inguinal canal, an epididymitis might be obscure; obstruction to the intestines, localized peritonitis, etc., might be suspected. A careful examination of the genito-urinary tract will clear the situation of doubt.

### Treatment.

Seldom, if ever, is epididymitis a disease per se, but almost invariably appears as a complication of urethral disease, the infecting element spreading to new areas and awakening the parts in turn to a state of disease, hence our best efforts should be in the direction of prophylaxis.

Since the complication is so painful and serious, never should an opportunity be lost to limit urethral disease and confine it to safe and accessible parts of the canal. What has been said in reference to the treatment of gonorrhœa and urethral inflammation has a place in the preventive treatment of epididymitis. Since the bicycle has become so universally adopted as an instrument of pleasure, recreation, and business, its use should be forbidden in the most positive terms during urethral disease.

It is in this connection that the surgeon, on account of the nature of the disease, is forced to prescribe for the patient, when positively assured that his measures will not be executed. Seldom will a patient be taken off his feet so long as he can manage to walk, and even then he will decline to take his bed and receive proper attention.

The first moment he is aware that his trouble is better he is up and going, so it is that the surgeon is denied the



value of those things most useful in the management of epididymitis. Whether the patient disregards the instructions given him, on account of his surroundings or his pleasure, it is, nevertheless, our duty to advise him fully upon all matters of treatment.

Should the subject of gonorrhœa have a redundant scrotum, a varicoele, or give a history of having a previous attack of epididymitis, a tight-fitting suspensory bandage is a necessity; the use of such will do much to preserve the integrity of the part.

Where inflammation of this part is at hand, the indications for treatment are those calculated to subdue the disturbance and promote early resolution. Rest in the recumbent posture should be the first demand. Elevation and support of the scrotum, the bowels should be freely opened, a light diet ordered and all urethral medication stopped. The comfort of the patient should next be considered; hot applications in the form of fomentations or poultices do much to relieve the pain and limit engorgement. The fomentations may be made by arranging several layers of lint, gauze or flannel, of a size that will generously cover the scrotum; this material is soaked in hot water, or a pint of hot water in which a tablespoonful of tincture of opium, tincture of lobelia, boracic acid, tincture of arnica, witch-hazel extract, or half an ounce of tobacco has been added, the cloth slightly compressed and applied as hot as can be tolerated. The parts should be held well upon the abdomen with a T bandage, handkerchief, sling, or some suitable support, and the whole covered with oiled silk. A second dressing should be in readiness when the first becomes cold, the second applied without disturbing the inflamed parts. The applications will require changing about every two hours. A hot water bag between the thighs will do much toward keep-



ing up the heat. When it is impracticable to receive this attention, the flax seed, or powdered elm poultices can be used. I have had great satisfaction from a mattress of rubber, coiled to fit the part and connected with a reservoir of water heated to about 110 degrees Fahrenheit by a small gas burner. The water circulates through the tubing and maintains any desired temperature for any length of time.

The tobacco fomentation very often serves a wonderful purpose; it may relieve pain at once, and in other respects adds greatly to the improvement of the part; at times nausea, vomiting, and relaxation follow its application. Leeches applied to the part do good by depletion.

I have almost abandoned the use of tincture of iodine; it will blister, and seldom benefit. I have used campho-phenique with satisfaction; it acts as a local anæsthetic, but it, too, will occasionally blister if closely confined.

Prescriptions Nos. 42, 43, 44 and 45 may be used as directions indicate:

## No. 42.

R.—Tr. verat. virid. (Norwood's)..... $\mathfrak{z}\text{i}$   
 Kali. brom..... $\mathfrak{z}\text{iiii}$   
 Elix. cinchon..... $\mathfrak{z}\text{iv}$   
 M. ft. sol.  
 S. A teaspoonful in water every three hours.

## No. 44.

R.—Pulv. opii.....gr. xx  
 Ext. belladonna pulv.....gr. iv  
 Oleum theobromatis..... $\mathfrak{z}\text{vi}$   
 M. ft. suppos. No. xii.  
 S. Insert one into the rectum every four to six hours to relieve pain,

## No. 43.

R.—Quininæ sulph..... $\mathfrak{z}\text{i}$   
 Phenacetinum..... $\mathfrak{z}\text{ss}$   
 M. ft. caps. No. xii.  
 S. One every two or three hours to relieve pain and subdue fever.

## No. 45.

R.—Sodii salicylas..... $\mathfrak{z}\text{iv}$   
 Morph. sulphas.....gr iv  
 Aqua menth. pip..... $\mathfrak{z}\text{iv}$   
 M. ft. sol.  
 S. A teaspoonful in water every two, three or four hours to relieve pain and promote rest.

Any remedy whose action tends to lower arterial tension is beneficial. In those cases where the production of

fluid aggravates the situation, a trochar may be introduced and the fluid withdrawn. At all events the patient must be made comfortable. Should the above recommendations fail, morphia should be given in quarter-grain doses (hypodermatically) every three hours until relieved.

Strapping the testicle is an old practice and one that never fails to benefit, if properly performed. It is useless to say that unequal pressure will intensify the pain and add to the disease. The testicle should not be strapped when in a state of inflammation so acute as to develop extreme pain when handled. Absolute rest is here called for.

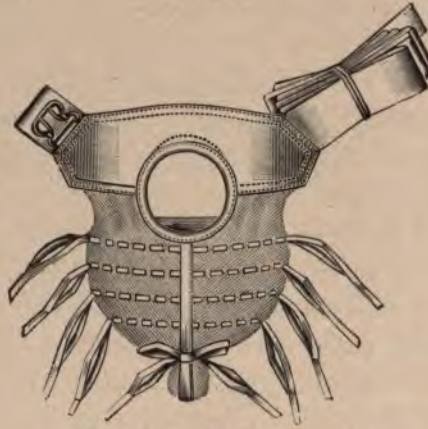
If the tumor can be manipulated with comparative comfort, strapping is indicated. Rubber adhesive strips, about half an inch wide and eight inches long, should be prepared, and arranged in easy reach of the operator, the plaster should be warmed and handled by an assistant, the parts should be shaved and sponged with alcohol.

The patient should be semi-recumbent, the testicle should be gently pressed to the bottom of the scrotum, the thumb and finger of the left hand then encircle the scrotum above the testicle, making a neck or constriction so small that the testicle can not pass through; this pressure is increased until the neck or constriction will only admit a body the size of a normal organ; it is at this point that the first and most important step is taken; it is here that the first strip is placed, so encircling the scrotum that its presence takes the place of the fore-finger and thumb, which are removed as the plaster is applied; overlapping and below this strip a second is placed, and so on uniformly until such strips will no longer take smooth and even place. The uncovered scrotal tissue at the bottom will look congested and tense. This portion is covered and compressed with strips applied at right angles



to the circular in such a manner that the operation, when complete, has the appearance of a basket woven snugly about the part. There will be some pain at first; pains may run up the cord into the abdomen, but when the work has been properly done, and time allowed for the organ to rest, there will be great relief and comfort. Such a dressing as this should be removed when it ceases to accomplish the object. If the discomfort and suffering is augmented after two or three hours, it is evident that

FIG. 42.



White's scrotal compressor.

the organ was not in proper form for strapping, or that the work was not well done; in either instance, warm alcohol should be applied, the dressing removed, the organ rested, and re-strapped. When the swelling has subsided to an extent that the pressure from the strapping is no longer maintained, the first dressing should be removed and replaced by a second, and so renewed from time to time until there is no longer pain or swelling.

Often a strapped testicle suspended in a well-fitting suspensory will enable a sufferer to go about his business with comparative ease.



I have seen no device equal to it, and in all those cases, where the patient will not, or cannot be taken off his feet, there is nothing that so effectually takes the place.

In the shops are found many supports that are serviceable and convenient; they are better than strapping poorly done, but inferior to good work. Fig. 42 represents an excellent pattern.

The actual cautery applied to several points of the inflamed epididymis is recommended, also the application of counter irritants. I have used the cautery a few times; it certainly is not a popular thing to engage, nor am I convinced that the end justifies the means. Whatever be the treatment proposed for trouble here, that which brings the greatest comfort and relief, as a rule, is the most efficacious; the treatment that has done this and favorably influenced the inflammation is to be continued until there is entire restoration of the part.

Thickened, hard, and even painful areas may be left in the epididymis, or in the vas deferens; these should be cared for. The part should be supported with a suspensory, mercurial or lead ointment, applied and the general health promoted.

#### **Orchitis.**

Inflammation of the secreting structures of the testicle is called orchitis. This disease, as compared with epididymitis, is quite rare. Gonorrhoea and urethral disease predispose to it, while the metastatic condition, so poorly understood, appearing during an attack of mumps, contributes the greatest number. About five per cent of all attacks of mumps in young men (about the age of puberty) offers such complication. Just what the connection between the parotid gland and the testicle is, observers and students are not agreed, and a work of this kind would hardly be the place to discuss such matters. One

testicle only is attacked; as a rule, the right somewhat oftener than the left. Typhoid fever, malarial fever, tonsillitis, traumatism, or syphilis, may be the cause; often no rational explanation will be offered for its development. A perceptible percentage of the author's cases have given only a history of a strain, due to heavy lifting. Sexual excess, exposure to cold, and the rheumatic diathesis are also given as causes.

#### **Prognosis.**

A prognosis must be guarded, for it is very seldom that the organ in true orchitis is ever the same as before, and often the condition results in a complete sacrifice of it. I have seen the disease appear as a complication of malarial fever, and in the face of every attention, suppuration take place and the entire secreting portion of the organ come away as necrotic shreds. Orchitis complicating mumps is not so destructive, though here every attention should be devoted.

#### **Symptoms.**

As nutritive disturbances in the testicle multiply, and congestion begins, the organ begins to increase in size, with little change in shape. Its investing membrane (the tunica albuginea), being inelastic, is soon put upon the stretch and pain is evoked as this progresses. The tone and degree of this pain very often is marked beyond all proportion to the swelling. This symptom being so pronounced, that rest is impossible, nausea, vomiting, dull headache and fever come on. The testicle is drawn toward the abdomen on account of spasm of the cremaster muscle and dartos; the slightest motion is complained of, and no position, application, or support, will bring comfort. Such a state will continue for several days; pressure necrosis may develop, which will promptly end the



pain, and the usefulness of the testicle at the same time; or pus may form, fluctuation may be detected, and a liberating incision may relieve the symptoms and enable the part to recover completely or partially.

In some cases there is a mild decline of symptoms followed by gradual improvement, the testicle all the while undergoing a process of induration, until the organ appears reduced in size and altered in shape and function.

There may be a stony hardness of the testicle and the entire side of the scrotum much reddened. Very often the formation of pus takes place in several parts of the testicle, and as many fluctuating areas are noticed, when opened these points discharge pus for a time; later the openings become plugged with a necrotic fibrous material that is difficult to remove. This pushed back, a flow of pus follows, this fibrous element is the necrosed tunica albuginea, often the testicular substance presents; after a time this material becomes detached, and long extensive masses are removed with forceps. Such a condition means, that the inflammation and pressure, has been so great that death of the part has resulted. At these little openings a red vascular little mass may appear, which may increase in size until it assumes conspicuous proportions, from the side of which a small fistula will be noticed leading down to the remaining portion of the testicle; through this little opening a few drops of pus may pass daily; this state may persist for many months. Through such a surface infectious material may find access and becomes responsible for new abscesses.

#### **Treatment.**

When a diagnosis of orchitis is reached, the recumbent posture with hips elevated should be demanded, the bowels freely opened, the diet kept low and unstimulating,



the testicle should be freely depleted with leeches, and kept at perfect rest. So long as this treatment prevents engorgement it should be continued. Should the pain increase it is evidence that the measures are inefficient and demand that the tension must be further lowered, which may be accomplished by local blood-letting and ice to the part. Should this fail, the tenotome should be made to cut the tunica albuginea in from six to twelve places until relief to the part is had. (A few drops of cocaine inserted under the skin renders this operation painless.) After this operation the part may be treated with a lead and opium lotion, hot or cold applications, poultices of tobacco, lobelia, witch-hazel, etc. Opium, hypodermatically, by the stomach, or suppository, should be prescribed when indicated. Should pus form, free and early opening with surgical care is necessary. Exuberant granulations or fungoid growths found about the openings may be clipped off, burnt with nitric acid, or treated to dry dressings. Their presence associated with fistulæ means an infection, and the best cure is to open up freely and remove the focus. When the necrotic tissue presents at the openings made for the liberation of the pus, gentle effort should be made to remove it, otherwise all that remains of the testicle may come away with it. The cardinal points of treatment are: Keep the patient and the part absolutely at rest; if necessary narcotize one or both. Should inflammation increase, leeches or local blood-letting; should this fail don't delay the incisions into the tunica albuginea; relieve the pressure before gangrene is induced.

#### **Epididymo-Orchitis.**

As indicated by the name, epididymo-orchitis is an inflammation of the epididymis and testicle. All those influences capable of exciting nutritive disturbances in

either of these organs predisposes to trouble of this kind. When gonorrhœa or other septic material from the deep urethra finds its way to the epididymitis it is only a step further to the testicle, and much oftener than some believe the latter becomes invaded and diseased. When this condition is met all that has been offered in the way of diagnosis, prognosis, and treatment of the troubles independent of each other should be insisted upon.

#### **Deferentitis.**

By far the greatest number of inflammatory diseases of the genital tract are those due to septic infection, gonorrhœa being the most prominent. That the element travels in any other way than by contiguity of tissue very few believe. For many years it was held that the infecting germ traveled by jumps, thus skipping certain portions.

In the light of modern science, such theories fall; therefore all areas trespassed upon by these destructive agents are more or less damaged. When the vas-deferens has become the pathway for gonocci or other pyogenic micro-organisms there is resulting inflammation, which has been given the name of Deferentitis or Funiculitis.

Rarely does this inflammation receive recognition or treatment, for an inflammation of the seminal vesicle, epididymis, or testicle, which is usual when the vas-deferens is infected, overshadows it.

When inflamed the vas-deferens becomes enlarged, irregular and tender. The pain is often complained of in the pelvis or rectum, and often rather hard to locate.

#### **Cystitis.**

Inflammation of the urinary bladder is called cystitis. Two such diseases are known, the acute, and chronic; the latter, however, is distinctly different from the former, as



will subsequently be shown. Gonorrhœa as a causative factor in acute cystitis is as constant as in the development of complications in the genital system. Unclean matters introduced into the bladder through improper, or injudicious use of instruments, bearing infectious elements, stone fragments, over-distention due to any cause whatever, abnormal urine, improper urethral and bladder injections and irrigations, the internal use of those drugs containing turpentine, cantharides, etc., stricture of the urethra, prostatic hypertrophy, the influence of cold, pressure from tumors, and traumatism, may cause cystitis.

#### Symptoms.

If there is present gonorrhœal disease in the deep urethra, or evidence of recent inflammation due to other causes, the bladder neck as it is encroached upon will be first to show disturbance; there will be developed in addition to the symptoms of posterior urethritis, a tenesmus, that may be so mild as to cause but little discomfort, or so extreme and constant as will force the patient to devote himself to acts of micturition every few minutes; being driven by this ungovernable impulse, he will strain without relief, forcing only a few drops of urine, mixed with blood, pus and mucous.

Notwithstanding the fact that gonorrhœa has been responsible for cystitis, seldom does the bladder lining become involved, the inflammation is usually located near the neck; nor can pure cultures of gonococci be grown from inflamed bladder tissue. There will be bladder and hypogostic tenderness, heavy feeling in the rectum, and radiating neuralgic pains in the back, thighs, penis, and testicles.

Mild constitutional disturbances are noted.



**Diagnosis.**

The frequent occurrence of cystitis, the pain, inconvenience and importance attached to it, its amenability to treatment, render it important that it should be distinguished from those conditions giving expression to the same character of symptoms. Deep urethral disease will often be a part of the trouble, so may diseases of other neighboring parts, which are to be recognized. The urine, perhaps, offers the most positive guide, and very often through it alone a diagnosis can be made.

Early in the disease the urine is acid, which when voided into a clear glass and permitted to stand a few minutes, the specimen will display itself in two distinct strata. The bottom layer will be pus; it will look thick, white and granular; the upper layer will be cloudy but less dense, and will consist largely of mucus with some pus, and a fair idea of the extent of the inflammation will in this way be gained. If the trouble be of considerable duration or should some obstruction to the outflow of urine exist, and more or less retention result, the urine will undergo putrefactive, or ammoniacal decomposition; it will then be alkaline in reaction, bacteria, amorphous, and triple-phosphates will be present, and it will have an unnatural (sometimes putrid) odor; it will be thick, tenacious and ropy; it will adhere to the side of the glass. Such a condition cannot fail to be recognized and means cystitis. The three-glass test is very satisfactory. Have the urine passed in three glasses; if the first portion of urine contains pus, and the other two portions remain clear, you are safe in concluding that the debris came from the deep urethra and that the bladder is not involved. Should the first urine passed contain pus, and the second and third portions be turbid, the second more so than the third, you are to believe that the bladder neck as well as the deep

urethra is inflamed. Should the first urine passed be clearer than the second, and the second clearer than the third, we understand that there is less inflammation in the deep urethra than at the bladder neck, and that there is inflammation within that has produced a heavy sediment in the bladder, hence the very turbid appearance of the third portion. Application of the usual test for pus will demonstrate its presence.

#### **Chronic Cystitis.**

This form of inflammation of the bladder may succeed the acute, and continue indefinitely as a low catarrhal process, taking on acute symptoms at times, and lapsing again into a sub-acute state, or, as is most frequent, the trouble, may come on slowly and never become acute.

This is especially true of that vast number of sufferers belonging to the class of prostatics. Little by little the drainage level of the bladder is raised, by the slow increase of the prostate, residual urine increases as this is done, ammonia products, and micro-organisms, excite inflammation and there is cystitis.

Not alone is prostatic hypertrophy responsible, but strictures of the urethra, tumors pressing upon the parts, and all those influences impeding and obstructing the urinary flow.

#### **Treatment.**

The treatment of cystitis should be direct and indirect. Whether it be due to gonorrhœa, obstruction or any other cause, the management is essentially the same. Here again, rest is of first importance; such a condition of quiet is at times necessary that on the surface of the urine in the bladder there is not a wave or ripple. The hips should be raised and the urine kept from the bladder

neck. The general health should be cared for, and the use of such demulcent diuretics as will flush out the bladder with minimum discomfort.

For the accomplishment of this purpose, the following prescriptions will be found useful:

## No. 46.

R.—Ext. zea mays. fld..... ℥iii  
 Ext. hyoscyam. fld..... ℥i  
 Acidum benzoicum..... ℥ii  
 Ext. cascara sag..... ℥i  
 M.  
 S. A teaspoonful in a wineglassful of water four times a day.

## No. 48.

R.—Ammon. benzoat..... ℥ii  
 Ext. belladon. pulv..... gr. iii  
 M. ft. chart. No. xii.  
 S. One powder in a cup of hot water three times daily.

## No. 47.

R.—Urotropin..... gr. c  
 Ft. chart No. xx.  
 S. One powder in a glass of water after each meal.  
 Often of great service when the urine is alkaline and much decomposed.

## No. 49.

R.—Ext. tritium repens fld..... ℥iii  
 Ext. rhus aromat..... } aa ℥i  
 Ext. saw palmetto..... }  
 Lithii salicylas ..... ℥ss  
 M.  
 S. A teaspoonful in water after meals.

Copaiba, cubebs, boric acid, pareira brara, potassium chlorate, salicylic acid, the sulphites, turpentine, etc.

At all events it is desirable that the urine be kept slightly acid. No remedy should be used that will act in opposition to this end. Fresh fruits I have found to be admirable in many ways.

Vesical tenesmus should be quieted. If necessary Rx. 44 may be resorted to. Sulphonal in ten to twenty grain doses will often promote sleep, and needed rest. The bladder should be washed once or twice daily, using nitrate of silver, two to five grains; boric acid, one ounce; permanganate of potash, five to ten grains, or sulphate of zinc, twenty grains, to the quart of warm water.

In all those situations, where cystitis develops as a result of obstruction to the urethra, permanent success will depend upon the location and removal of such obstruction.



### **Ureteritis.**

Infectious elements from the bladder find their way to the kidney through the ureter and leave this narrow canal in an inflamed state; small kidney stones pass down the ureter, doing more or less damage, and exciting inflammation; careless abdominal surgery often damages the ureter; malignant and tubercular diseases attack it. It is probable that ureteritis exists oftener than is recognized. During the passage of a stone, the pain is of an agonizing character, and so confined to the part that an error in diagnosis is not likely to occur. The other forms of inflammation are much less pronounced, the symptoms less definite, necessitating much care and accuracy in reaching a diagnosis. Appropriate treatment would be the correction of the underlying condition, together with such general and palliative measures as may be indicated.

Pyelitis complicating gonorrhœa will be considered under Diseases of the Kidney.

### **Gonorrhœal Conjunctivitis.**

This active and rapidly destructive form of conjunctivitis encountered in adults, is synonymous with purulent, and blennorrhagic conjunctivitis. When met with during the first ten days of infantile life, it is called *Ophthalmia Neonatorum*. In either situation the disease is the result of infection of the conjunctival mucous membrane with discharges containing gonococci. These parts are peculiarly susceptible to infection from this source, the minutest quantity of such pus conveyed in the most indirect manner is all that is necessary to establish the disease with all its fury and serious consequences, hence the necessity of extreme precaution on the part of the surgeon handling such disease, and the patient possessing it.

### Symptoms.

There is an incubative period varying from one to four days (often the moment of infection was not noticed). The first symptoms complained of will be an itching, burning sensation, with undue lachrymation. The conjunctival surfaces will be injected and red; the several steps of inflammation will soon appear, perhaps, within a few hours migration of the plastic elements will develop, when much swelling, photophobia, and a copious discharge of pus will be in evidence. Such a condition steadily deepens for three or four days, when the attack attains its zenith. At this time the lids may be so œdematous, and inelastic, and the suffering of the patient such, that it is difficult or impossible to so manipulate the parts that a clear and complete inspection can be had. The inability to free the eye of pus, and the pressure on the cornea adds additional danger to the situation. Added to the swelling of the palpebral, is a like state of the ocular conjunctiva; as the lids are opened a mass of puffed, roughened and reddened tissue is noticed, at the center of which the cornea can be detected. Associated with this local condition are mild constitutional disturbances, some headache, fever, and general discomfort; on account of pain, loss of sleep, etc., the digestive and nervous systems may suffer.

### Diagnosis.

All violent inflammation of the conjunctiva in an adult suffering, or in those who have recently suffered an attack of gonorrhœa, or with those whose work brings them in contact with such infectious matters, namely, doctors, nurses, chambermaids, etc., or purulent eye disease in the new born, is to be regarded with suspicion. If gonococci can be found from a microscopic examination, the diag-



nosis is assured. The behavior of this disease bears such a contrast to the other forms of conjunctivitis that little difficulty is offered in differentiation.

#### **Treatment.**

From the brief description of this disease, it is evident that the treatment should be vigorous and complete. It is my custom to refer such cases to the Ophthalmologist. It is not always convenient or possible to do so however, hence the necessity of a proper conception of those measures so essential here. The course pursued by this disease is so rapid that no time should be lost.

A bed, a darkened room, a nurse, and a generous supply of surgical dressings should be had at once. The second eye should be protected with a watch crystal, fitted to a collodion dressing. It should be so shut off that no material from the diseased eye can reach it. Free purgation, leeches, iced compresses every fifteen to twenty minutes, preceded by free irrigation with a boric acid solution, or 1-10000 bichloride of mercury solution. The general comfort of the patient should be looked after, and an appropriate anodyne employed, if indicated. Should the cornea become ulcerated and give evidence of perforation, the pupil should be dilated with a solution of atropine (two grains to the ounce of water) if the ulcer be central; the pupil should be contracted with a solution of eserine (one or two grains to the ounce of water) if the ulcer be peripheral. Under such conditions, the remedy indicated should be used at such intervals as will keep the pupil dilated or contracted, as desired, until all danger of perforation and prolapse of the iris is passed.

Nitrate of silver (five to ten grains to the ounce of water) is often of great value. It can be used by dropping into the eye, or, what is better, evert the lids and



apply the solution with tooth-pick and cotton. Such an application should not be repeated until the parts have recovered from the previous application. No dressing that is heavy should be used, and no dressings should be used a second time. As the disease declines the treatment may be modified.

#### **Gonorrhœal Rheumatism.**

This disease is one about which there is much diversity of opinion. Many theories have been offered in explanation. That there is such a condition as gonorrhœal rheumatism, and that certain individuals suffering from an attack of gonorrhœa almost invariably develop a rheumatism which comes and goes with the disease, there is no doubt. It has recently been shown that joints attacked have contained gonococci, and their presence in the blood has been established by no less a pathologist than Dr. W. H. Welch. Personally, I have verified the correctness of the first statement, by finding these micro-organisms in the serous exudate of the knee joint, though I have never demonstrated their existence in the blood. Guided by the work of Hewes, Welch, Finger and others, it would seem that nothing is wanted in this direction.

This disease is always dependent upon gonorrhœa; the other forms of urethral inflammation have never been known to develop it. It may involve a single, or any number of joints, the synovial sheaths, bursæ, eye, or muscles, may be the seat of such disease. Usually it develops late, between the third and sixth week, of an attack of gonorrhœa, though it has been encountered as early as the sixth day. Something like two per cent of gonorrhœal subjects suffer from this form of rheumatism, which may be acute, sub-acute,

or chronic. There may be found about the joint, as a result of this inflammation, pus, sero-pus, a sero-fibrinous, or a serous exudate, dependent in each instance, upon the character of the morbid element exciting the attack. The gonococci, either alone or through their toxins, are believed to be responsible for this rheumatism, where the effusion is serous or sero-fibrinous; while other pyogenic micro-organisms are believed to occasion the purulent and sero-purulent varieties. The table, so carefully formulated by Finger, is interesting. It affords, at a glance, a very correct idea of the susceptibility of certain joints. Three hundred and seventy-five cases, collected from old and new literature, forms the basis of his work. Of these 375 cases

The knee joint was attacked one hundred and thirty-six times.

The tibio-tarsal was attacked fifty-nine times.

The wrist was attacked forty-three times.

The finger was attacked thirty-five times.

The elbow was attacked twenty-five times.

The shoulder was attacked twenty-four times.

The hip was attacked eighteen times.

The maxillary was attacked fourteen times.

The meta-tarsal was attacked seven times.

The sarco-iliac synchondrosis was attacked four times.

The sterno-clavicular joint was attacked four times.

The chondro-costal was attacked two times.

The intervertebral joint was attacked two times.

The peroneo-tibial joint was attacked one time.

The crico-arytenoid was attacked one time.

At least sixty per cent of the writer's cases developed this rheumatism when there was posterior gonorrhœa; in fifty per cent the disease was confined to a single joint; forty per cent the knee alone was implicated; seventy-two per cent the exudate was serous; sixty-nine per cent there was no history and no evidence of a rheumatic diathesis; thirty-nine per



cent had suffered previously from gonorrhœal rheumatism, and in eighty-two per cent there was no diminution of the urethral discharge with the onset of rheumatic symptoms.

#### Symptoms.

To present the picture of gonorrhœal rheumatism, I have selected an average case from my record book which will, no doubt, serve the purpose :

May 30, 1897. A. S. H., age thirty-one. Family history and general appearance good ; habits irregular ; had measles when about eleven years of age, mumps when eighteen, pneumonia at twenty-six. No syphilis. Had gonorrhœa at the age of twenty-six ; attack lasted about three months. Had stiffness and swelling of right knee, beginning the third week of the gonorrhœa and lasting for about two or three weeks after the urethral discharge disappeared. Was confined to the bed about a week, to the house about three weeks. The knee was never lanced, nor did it break.

Present condition.—May 18, 20, 23 and 26 was exposed to venereal disease. May 28, detected first symptoms of urethral disease. Clinical evidence and microscopic examination made the diagnosis gonorrhœa. The appropriate treatment was prescribed and especial care enjoined that rheumatism be circumvented. Notwithstanding his previous experience and the advice given, he continued club attendance, moderate dissipation and received irregular treatment. He reported in person June 18, complaining of stiffness and discomfort in his right knee ; his urethral inflammation was general and active. He was ordered home, provided with a nurse, and the treatment of his gonorrhœa became thorough. He was visited June 19, the joint well padded with absorbent wool and fixed with plas-



ter, in which was included several coils of rubber tubing attached to a reservoir, kept hot with an alcohol lamp, the object being a convenient and constant application of heat. The bowels were opened with rochelle salts, ten-grain doses of salol administered three times daily, and sexual and urethral hygiene enforced. June 19, patient more comfortable, fever  $102^{\circ}$  F., pulse 109, tongue slightly coated, bowels open, forty-nine ounces of urine voided in last twenty-four hours, slept seven hours, urethral discharge diminished. June 20, 21 and 22 very much the same, with no change in treatment. June 23, cast removed; the joint red, swollen and tender, fluctuation distinct; rubber bandages applied above and below the joint (forcing the exudate to the center), a puncture with a sharp bistoury and the escape of eleven ounces of serous fluid. A wet dressing of bi-chloride gauze, and over this a snug flannel bandage. The heat continued, the urine slightly acid, temperature  $99^{\circ}$  F., general condition improved; during the next three days condition and treatment essentially the same. June 28, temperature normal, pulse eighty, urethral discharge slight, joint free from pain and redness, but slightly swollen; general condition good. From this date the improvement was gradual and uninterrupted. July 4 the urethral disease had disappeared, the rheumatism no longer existed, and the patient was permitted to participate in patriotic celebrations, divested of alcohol and hilarity.

#### Prognosis.

As a rule, this complication of gonorrhœa recovers; in the intemperate, the infirm, and those cases where there is large accumulation of pus in a joint the future

is doubtful. It is well, therefore, to bear in mind these possibilities when predicting the outcome of gonorrhœal rheumatism.

#### **Treatment.**

From this it will be seen that there is no special therapy in this direction. One is tempted to prescribe oil of wintergreen, iodide of potash, colchicum, lithium, and the drugs useful in rheumatism. They may all be tried, and benefit will come only when urethral inflammation is improved. The time-honored balsam copaiba, oil of sandal-wood and cubebs will do more than the anti-rheumatic remedies. Therefore, all those measures having a favorable influence upon the original gonorrhœa, are especially recommended in this disease. Counter-irritants to the inflamed areas, the early and free evacuation of fluid or purulent collections, and the subsequent surgical care of such condition is necessary.

## CHAPTER VI.

DISEASES OF THE PROSTATE—GENERAL CONSIDERATION—FOLLICULAR PROSTATITIS—PARENCHYMATOUS PROSTATITIS  
—TUBERCULOSIS OF THE PROSTATE—MALIGNANT  
DISEASE OF PROSTATE—PROSTATIC STONES  
—ATROPHY OF THE PROSTATE—HYPERTROPHY OF PROSTATE.

Diseases of the prostate can develop as a complication of posterior gonorrhœal inflammation; in fact, gonorrhœa is a most potent factor in developing trouble along its line of progress, as has been shown in the previous chapter, yet there are many causes for inflammation in this organ. Should gonococci or other pus producing micro-organisms that occupy the urethra, find their way into the follicles of the prostate, or should debris from the bladder, unhealthy urine, septic material from catheters, and urethral instruments, calculous particles, rancid suppositories, improper irrigations and instillations, or any unwelcome material, unwholesome manipulation, exposure or injury capable of disturbing the circulation and exciting inflammation, the resulting disease will be either a parenchymatous prostatitis (if the real substance of the prostate is involved), or a follicular prostatitis (if only the follicles be attacked).

### Follicular Prostatitis.

In a general consideration of the disease of the prostate, it will be remembered that the organ participates in, and undergoes physiologic congestion during vene-



real excitation, hence ungratified sexual wishes, and such prolonged engorgement is often the starting point of disease. Improperly constructed bicycle saddles are responsible for injury; masturbation, constipation, sexual excess, stricture of the urethra and possibly exposure to cold.

The most frequent pathologic condition of the prostate brought to the notice of the surgeon is that obstinate sub-acute variety, due to gonorrhœa or the result of sexual excess, ungratified sexual wishes, masturbation, etc., in which there is inflammation of both follicles and a mild engorgement of the prostate proper. Such a condition may offer a train of acute symptoms at first, especially if it be due to gonorrhœa; as a rule, however, follicular prostatitis is a chronic disease, and very often the only feature noticed is the almost constant discharge of a muco-purulent material that is mistaken for seminal fluid, which belief awakens apprehension, and becomes the foundation for much fancied trouble. That condition called prostatorrhœa, so prominently discussed and flagrantly pictured by the advertising specialists is this follicular disease. Such sufferers have devoted themselves to venery, either in thought or act, and their genitals very often are strangers to rest, hence much difficulty is added to their treatment.

#### Treatment.

Sexual hygiene holds first place. The bowels should be freely moved; fluid extract of cascara sagrada is an ideal remedy. Counter irritation to the perineum has a double value; a blister here will favor resolution as in other situations, and if the surface is freely stimulated it will afford the patient (who is usually despondent) something in the order of a change to think

about. Cantharidal collodion, tincture of iodine, ichthyol, guaiacol, mustard, etc., may be used. These patients will bear with fortitude any treatment, no matter how painful or how heroic it may be.

In blistering this part, it will be well to remember that debris accumulates here, and is liable to infect any open surface, therefore the part should be protected. The scrotum bears such remedies poorly, and should be protected or held at a safe distance. Care should be exercised, also, to protect the anus. Sulphonal given at bedtime to promote sleep, monobromated camphor during the day to quiet the sexual organs, tonics to improve nutrition, cheerful and moral literature and those measures generally that add variety and pleasure to life.

Prescriptions Nos. 50 and 51 will be found of much value :

## No. 50.

R.—Fl. ext. rhamni purshianae..... ℥i  
 Fl. ext. cannabis indicæ..... ℥i  
 Fl. ext. hyoseyannæ..... ℥i  
 Elix. peps. bis. et strych..... ℥ii  
 M.  
 S. A teaspoonful in water after meals.

## No. 51.

R.—Tr. cantharidis..... ℥i ss  
 Potassii brom..... ℥iv  
 Elix. lactopept..... ℥iv  
 M. ft. sol.  
 S. A teaspoonful in water three or four times daily.

Iodoform applied to the prostatic urethra is of service. A drop of campho-phenique, a few drops of a weak solution of sulphate of copper, or nitrate of silver (two grains to the ounce) with a deep urethral syringe; the cold sound can often be employed with advantage.

I have used a solution of permanganate of potash with the apparatus represented in (Fig. 30), by filling the urethra, keeping up the pressure until the muscles at the bulbo membranous urethra are tired out and become



relaxed; then fill the bladder and have the patient pass it out. In this way the solution acts upon the part both as it goes in and comes out. A soft catheter may be passed to the beginning of the prostatic urethra, the bladder filled and emptied as above.

A follicular prostatitis may become a parenchymatous affection, and what has been said would then be added to what will now be presented as a description of

#### **Parenchymatous Prostatitis.**

When the parenchyma of the organ becomes inflamed, its volume is increased and its capsule made tense; on this account there is pain proportionate to the degree of intra-capsular pressure, which may vary from a slight uneasiness, to unbearable suffering. The exciting cause, together with the integrity of the part, will measure the grade and course of the attack; thus, should gonococci, streptococci, or staphylococci, find their way into the substance of the organ and the organ be poorly prepared to do battle with them, the trouble will be extremely acute and will pursue a rapid course. From its close relationship to the bladder and the rectum, pain and inconvenience will be complained of in these localities. Often the patient believes his trouble to be one of the rectum, and less often the bladder and kidneys. If the organ is perceptibly enlarged or tender, the index finger in the rectum will at once furnish very complete information. The prostate often becomes so enlarged that it materially encroaches upon the rectum, rendering defecation painful and producing a constant uneasiness; the finger can locate the part or parts most involved, detect fluctuation when pus is present, and in a word, this constitutes the most satisfactory feature of examination.



The swelling in the same way encroaches upon the urethra, and neck of the bladder, making micturition difficult, painful and at times impossible.

Like the uterus of the female, the prostate bears disease and injury well; inflammation in this situation behaves as inflammation elsewhere, the organ may undergo resolution or terminate in suppuration. There is a fever, which may reach 105° F. There may be rigors and the complete picture of pus formation. Prior to this time the symptoms may begin to disappear and the parts slowly return to the normal, or there may be a sudden giving way and a quantity of pus passed through the urethra, perineum, or into the rectum or bladder, and the symptoms disappear as by magic; the patient may go on to recovery or there may be recurrences, followed by great depression, and the condition become a general septic one with doubtful future. The gland may become hard or irregular and on this account be responsible for inconvenience, or it may end in a follicular inflammation.

The treatment is the observance of sexual and urethral hygiene. Empty the bowels with a warm injection; if the organ is enlarged and painful, showing evidence of pus formation, I inject into the part that seems the center of the inflammation twenty drops of pure carbolic acid. This I have not seen recommended nor do I know of its use by another. It is my belief that many times I have aborted the suppuration by establishing premature resolution. I have made as many as four injections into the same gland, and have seen no harm come from its use; I give this the first place in all those situations where pus formation seems the behavior. The bowels should be kept freely open. An appropriate anodyne

is necessary to secure rest; this may be a suppository in the rectum, containing one or two grains of opium; morphine or codeine, one-eighth to one-fourth grains, either by the mouth or hypodermatically. The urine should be cared for; when retention results, a catheter is imperative, and should be used with caution and gentleness. Benzoic acid, five to ten grains, or benzoate of soda, five to ten grains, three or four times daily, to prevent the formation of ammonia products. Rxs. 52 and 53 are valuable.

## No. 52.

Rx.—Lithii salicylas ..... $\overline{3}$ i  
 S. Dissolve in a gallon of water, and take a glassful four to six times a day.

## No. 53.

Rx.—Elix. buchu, juniper and acet. potash..... $\overline{3}$ vi  
 S. A teaspoonful in a glass of water, six times in twenty-four hours.

The diet should be nutritious and digestible. For the pressing desire to urinate, which is always at hand when the urethra and bladder are involved, an opium and belladonna suppository should be used in the rectum.

Fever can be combatted with cold sponging; the internal administration of quinine sul., five to ten grains, every three or four hours; acetanilid, five grains, every three or four hours, or any antipyretic that is safe to use. The gland undergoing enlargement and change in shape, does so in the direction offering least resistance, hence the urethra, neck of the bladder, and the rectum are encroached upon.

The structures about the prostate can become inflamed (peri-prostatitis) and behave very much in the same way as the gland proper. When pus has formed and its location made sure, which can be, with the history at hand, the finger in the rectum, and by explora-



tion with the hypodermic needle, the tumor may be aspirated, or it may be incised or punctured through the perineum, the pus liberated and the resulting wound treated surgically.

#### **Tuberculosis of the Prostate.**

A process of caseation, beginning in the glandular element of the prostate in the tuberculous subject is a condition occasionally observed, the organ at first is irregular in outline, hard and not the source of much pain, there may be bladder and urethral trouble if this area is interfered with, or there may be an uneasy sensation in the rectum. There is a discharge from the urethra, and the ejaculatory ducts may become diseased to which additional symptoms would be added. Tubercle bacilli may be found in the discharge or in the urine. If a diligent search be made, it will often be that the tuberculosis of the prostate is found dependent upon a like condition of other parts. When tuberculosis is suspected here, a complete search for a general tuberculous condition should be made. The prognosis of this condition is bad, very seldom does improvement, even of a temporary kind, come, and breaking down of the prostate is to be expected. A slow, and tedious suppuration comes, leaving fistulous openings behind, which latter become infected with other agents, hastening the destruction, and except death comes on account of tuberculosis of more vital parts, the patient will slowly give way to exhaustion from this source. There is little treatment that holds out prospect of cure, it is difficult or impossible to dissect, or curette out the entire part. The anti-toxines have not afforded the satisfaction that was hoped, and the best that can be done to-day, is to look



well to the general health of the patient, prescribe that diet, climate, and change that will do most for him, prevent complications by looking to his urinary organs, keep the diseased parts at rest and clean.

#### **Cancer of the Prostate.**

Occasionally cancer of the prostate exists, generally however it is secondary to malignant processes elsewhere. Such disease is more common in advanced than to early life, though cancer in this location has been diagnosed at a very early age. The symptoms are essentially those due to enlargement and irregularity of the organ. Malignant disease here is more gradual in its development than the inflammatory prostatic affections, and the subjective symptoms less pronounced. To the sense of touch, the organ is more irregular, not so hard, with some points that may appear soft; later in the disease the lymphatic glands will show involvement, and cancer cachexia will appear. When the urethra is included, instruments may bring away broken down material which, examined microscopically, may show characteristic cancer cells.

The treatment of cancer like the treatment of tuberculosis consists in keeping up the powers of resistance, by good diet, etc., and guarding against those serious results following obstruction to the urethra.

#### **Prostatic Stones.**

Within the open ducts and follicles, of the mature prostate it is usual to find earthy concretions of varying size; they may range from 1-1000 to 1-100 of an inch in diameter and may not have been noticed at all during life. An interesting condition that developed at a recent autopsy, was the discovery of

eighty-two concretions of a size sufficient to be gathered with a scalpel and forceps (an average being a small bird-shot or millet seed), from the prostate of the man fifty-six years of age who had never known any trouble in this region. When found in the gland of the aged, they are very hard, usually of a gray color. They form, no doubt, much in the same way as do biliary and salivary bodies; during their period of development, they take on earthy salts from the urine. Rarely do they require attention, often they eliminate themselves by a process of ulceration, which may be through the rectum, perineum or into the urethra, leaving behind a tract that may or may not heal. If of sufficient size to detect, and become the source of trouble, they may be cut down upon and removed. Undue size of these bodies shows a tendency to stone formation and should suggest a search of the bladder.

#### **Atrophy of the Prostate.**

Undoubtedly the prostate, under some circumstances, undergoes atrophic changes, defective blood supply, whether from general conditions, attended with an impoverished quality of blood, or from limited quantities of normal blood, the amount being diminished by conditions obstructing the vessels. Little importance attaches to a condition of this kind. There are few symptoms. Should atrophy of the glandular composition of the organ take place, the urethra would be denied the product of the gland and the spermatic fluid would not be complete. Should atrophy of the muscular feature of the organ occur, the ejaculatory movement would be wanting or incomplete. Should both be involved, there would result a combination of the above. The treatment consists in the removal of such obsta-



cles as are responsible, when of a nature that will admit, and the employment of such tonics and alteratives as will best improve the general tone of the patient.

#### **Hypertrophy of the Prostate.**

It has been stated in a previous chapter that many things about the prostate are common to the uterus, especially is this true in this connection when the meridian of life has passed. The prostate is inclined to hypertrophic changes, especially the development of fibrous masses. Precisely what the etiology is we are by no means agreed. There is much that relates to this phase of the subject that is interesting, and much that is not well understood. At all events, this organ begins to increase in size as age advances, seldom before the fiftieth year, usually later; that this increase is participated in by both the glandular and muscular constituents. As this hypertrophy advances the ever-changing organ takes that situation most acceptable, or rather encroaches upon the territory of those other bodies offering the least resistance, hence the urethra and bladder is most often imposed upon (Fig. 42). The enlargement is not always symmetrical, nor is the progress steady, though the development is usually slow; at times it is rather rapid, or it may progress for awhile, continue stationary, and begin enlarging again. Hypertrophy of the aged is not considered a disease, but rather considered a natural consequence.

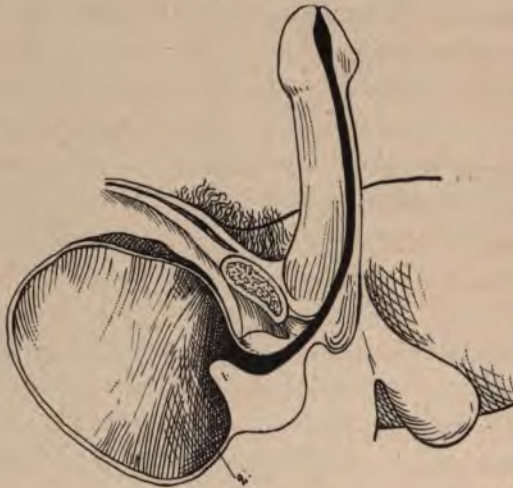
The overgrowth of the prostate very often so changes its original form that the organ appears to consist of three lobes; this third part is usually an ovid projection of the prostate into the neck of the bladder, where its presence acts as a valve during the act of micturition, and in this way is productive of the greatest incon-



venience and damage. Again, this hypertrophy may be so shaped, and situated, as to constitute a bar at the vesical neck. Whatever be the form and location of this intruding mass, the symptoms, and indications for treatment, will be measured by the extent of disturbance, immediate and remote.

On its own account, hypertrophy of the prostate is a condition of little moment, yet from its relationship

FIG. 42.



Hypertrophy of the prostate.

1. Prostate.      2. Bas-fond.

with the bladder, urethra and rectum, it very often robs the patient not only of many years of comfort, but sends many to the grave yearly who might otherwise have continued a useful life.

Hypertrophy of the prostate may then be considered a constant menace to good health, on account of antagonism to other important organs, especially the urinary.

Such a patient making application to the surgeon (on account of imperfect and misleading knowledge on his part), will probably ask for something for the kidneys; he will perhaps say that he has used with more or less satisfaction various domestic remedies, and often resorted to the usual secret nostrums that are advertised. When interrogated, he will admit that for some time the flow of urine has been slow to start, that the desire to void it is frequent, urgent, and worse at night, that the stream has diminished in volume and force, dribbling, or falling perpendicularly from the meatus, that the bladder continues unrelieved. He may mention that at times he has been unable to void his urine at all. A sensation of weight may have been noticed in the rectum, there are disturbances of the sexual organs incident to congestion, and invasion of that territory by the overgrowth. Neuralgic pains are complained of in the penis and testicles, erections and nocturnal emissions are usual. Disturbance of those important nerves found upon the floor of the prostatic urethra, many times gives rise to extreme and unnatural sexual fancies, occasionally approaching perversion, or to obliteration of sexual feeling. There will be present in the urethra a mucus, which will be found prostatic. As the condition advances the urethra is not only narrowed throughout its prostatic portion on account of the inward pressure of the unnatural gland, but that part enveloped by the prostate is lengthened and made irregular in proportion to the hypertrophy. By such an influence upon the urethra, and the raising of the neck of the bladder, the point of drainage becomes such that the bladder cannot empty itself. This state, favored by a so-called third lobe acting as a valve, or by the development of a bar at the neck of the blad-



der is the beginning of trouble, increasing, and serious. In the face of such impediment to the outflow of the urine, with the bladder so disturbed as to prevent complete evacuation of its contents, residual urine soon undergoes fermentive changes, the development of ammonia products inflame the organ, and the diseased urine exerts an unfavorable effect upon all parts with which it comes in contact. Urination becomes more difficult and painful, all of the symptoms enumerated are heightened, the bladder walls thicken and lose their contractility, the viscus becomes a hot-bed swarming with bacteria, the ureters may become infected and convey disease to the kidneys, or the inflammation may not pass beyond the bladder. By and by, on account of sleepless nights and days without rest, weakened for want of proper appetite and low digestion, and further by a low septic state, all the evidence of fading vitality are upon him and the flicker of life is slowly extinguished, not a disease within itself, yet such is the course of hypertrophy of the prostate.

Such a patient may die from uræmia, pyæmia, rupture of the bladder, pyelitis, pyonephrosis, or exhaustion.

How are we to diagnose this condition? How shall we prognose and how shall we treat it? The diagnosis is not difficult; cancer and tuberculosis of the prostate, stricture of the urethra, and stone in the bladder are the diseases from which it is to be differentiated. Should the patient be a man fifty years of age or upward, listen attentively to his story, gather from him all the information that he will give you, apply to him such questions as will develop the true meaning of what he has said, and strongly suspect hypertrophy of



the prostate if he clearly presents the symptoms previously mentioned. Even though his narration be ever so convincing, a diagnosis cannot rest upon it alone. Next, have him pass his urine in two glasses, observe the mechanism of the act, especially the force and volume of the stream, look for prostatic mucus in the first urine, put him in the knee-chest position, oil the index finger and examine the size, situation and texture of the prostate. This is a matter of greatest ease, and precision; note its contour, feel for fluctuation, painful areas, etc. Now place him upon his back, introduce a soft catheter and determine the presence, quantity and quality of residual urine, should such be found. With the catheter in the bladder, it is my custom to now learn its capacity by filling it with warm boric acid solution. Now, too, you may estimate the thickness of the bladder walls with the finger in the rectum and a sound in the bladder, and again observe the evacuation of the solution. Here the examination for the day should end. A day or two is required for recuperation, during this rest order all the urine collected and measured for twenty-four hours, and have a correct record of the hour and number of passages necessary to accommodate him. This urine should be examined carefully, both chemically and microscopically and all findings recorded.

At the next sitting the contour, size and shape of the urethral and bladder portions of the gland should be determined, all irregularities of the prostatic urethra, together with the degree of elongation of this portion, this can be done by placing the patient upon his back, legs slightly flexed and with a flexible bulbous bougie (Fig. 43); the beginning of the prostatic urethra is marked on the stem of the instrument, and by slowly

coaxing the instrument through this part of the canal, irregularities are noted, as met and passed; when the bulb has entered the bladder a second marking is made upon the stem of the instrument and the distance between these two will be the length of this part of the

FIG. 43.



BLEES-MOORE INSTRUMENT CO.

Bougie à Boule linen.

FIG. 44.



BLEES-MOORE INSTRUMENT CO.

Nelaton Catheter.

urethra. Very often the urethra is so narrowed and displaced that neither the Nelaton catheter (Fig. 44) nor the bulbous sound can be made to traverse it, when recourse can be had to instruments of different design.

The most frequent obstruction encountered in prostatic hypertrophy that calls for attention, is the over-



growth upward, from the middle portion of the prostatic urethra, which may exist to a degree absolutely blocking the way when instruments of regular pattern are used; this condition is known when a regular sound is abruptly arrested as it enters the prostatic portion. Such an instrument should be succeeded by one of a shorter curve, and introduced by keeping the point well against the roof of the urethra, with the view of having it over-ride the projection; failing with such an instrument the device of Thompson may be applied, which consists in removing the stylet from a medium English catheter, bend it in a way that it forms three-fourths of a circle three and a half inches in diameter, return the stylet thus curved into the catheter, that has been warmed, now place the whole into cold water until the catheter is temporarily fixed and rigid, remove the stylet and introduce the catheter before it becomes warm; the point of an instrument so moulded will keep well against the roof of the urethra and may pass over the obstruction with ease.

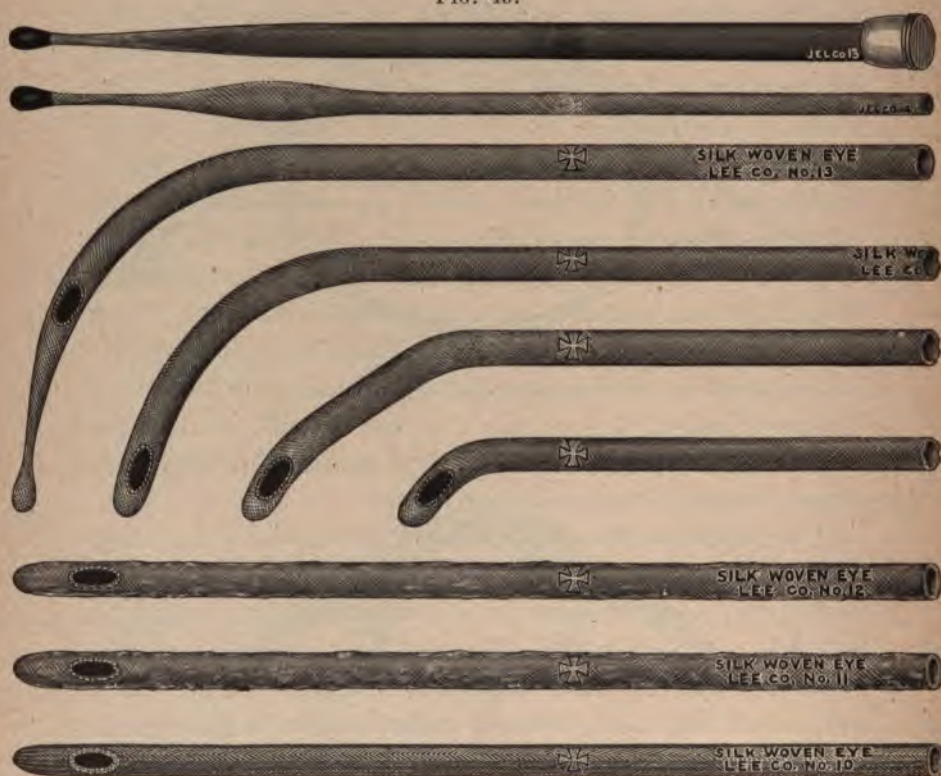
The instruments of Mercier, Fig. 45, may be used in this situation. Fig. 46 illustrates Gross' improved catheters; a stylet, bent to any desired curve or shape, can be used with the ordinary soft catheter. The jointed catheter has some advantages. Harrison's soft, oval bulb bougie has a place, and so with a great variety of others. As a rule, it is not difficult to enter the bladder; the instrument that best meets the requirement is the one to use, until a full knowledge of the part is had. Here the greatest gentleness is to characterize your manipulations; it is easy, especially with small instruments, to produce a false passage and lend difficult complications to an already complicated state. When the canal, with its irregularities, has



been learned, small flexible instruments may be introduced into the bladder and used as a guide for larger and regular shaped ones.

Prostatic disease or hypertrophy, with bladder disease, is an ideal state for the development of stone in

FIG. 45.



BLEES-MOORE INSTRUMENT CO.

Mercier's catheters.

the bladder, for which a search should always be made. Long continued retention of urine, with dilatation of the bladder, atony or sacculi, makes the vicus irregular and weak, undue efforts with an instrument is dangerous. The cystoscope can sometimes be used with

satisfaction. With this feature of ones duty accomplished, and a diagnosis reached, except there be disease of the kidney, a very advanced age, extreme condition or feeble state of health, the prognosis will be full of hope.

With care and obedience upon the part of such a patient, he may be promised great relief of his suffering and perhaps years of reasonable activity.

FIG. 46.



BLEES-MOORE INSTRUMENT CO.

Gross' improved.

#### Treatment.

The indications for treatment are: First, the adoption of those measures that best remedy a mechanical obstruction to the expulsion of urine; and secondly, the application of those principles that will overcome, or favorably influence inflammation and disturbance incident to pent-up and diseased urine, with the effects of over-distention and absorption of effete products. Good food (nutritious and digestible), warm, dry feet, comfortable and well-ventilated apartments, and a urinal within easy reach should first be provided. The



bowels should be regular; cascara sagrada is an excellent remedy; hot rectal injections once or twice a day are well worth the effort (warm water impregnated with turpentine is good). The catheter that was found applicable should be selected and the bladder daily irrigated. When the bladder has been over-distended, it is not well to withdraw all the urine at once, for fainting, nausea, vomiting, collapse, etc., has resulted when an over-distended bladder has been completely evacuated.

It will be well then at this sitting to remove the greater part of the urine, moderately fill the bladder with some antiseptic solution, have the patient change his position, that the heavy urine may be induced to leave the low level places and become diluted with the solution; then the catheter is opened and the bladder partially emptied. The prostatic urethra is almost invariably diseased and tender; much service is rendered it by introducing the catheter up to this point and filling the bladder with the selected solution, having it pass directly over, and disinfect this area. As soon as a distinct sense of fullness is noticed by the patient, the in-flow should be stopped; it is important to fill (without stretching) the organ. On account of extreme tenderness in the prostatic urethra, it is proper to give it some local attention, that treatment of the bladder may be carried out with the minimum inconvenience. Weak solution of nitrate of silver, one grain to the ounce, weak solution of copper sulph., zinc sul. permanganate of potash, carbolic acid, tannate of glycerine may be applied with a deep urethral syringe. The treatment of the bladder is that recommended for cystitis.

Mild antiseptic, and warm sterile solutions, can be used



in the bladder for the purpose of cleanliness. Chlorinated soda solution, boric acid, chloride of soda, nitrate of silver, ten grains of salicylic acid in an ounce of glycerine, and this added to a quart of water. The following prescriptions are recommended in prostatic hypertrophy, where the obstruction has resulted in bladder disease. Rxs. 54, 55, 56 and 57.

## No. 54.

R.—Ol. santal..... $\overline{5}$ iv.  
 Syr. acaciæ..... $\overline{3}$ iiiss.  
 M. ft. emul.  
 S.—A teaspoonful in water  
 four times a day.

## No. 55.

R.—Spts. terebinth..... $\overline{5}$ iss.  
 Pulv. acaciæ..... $\overline{5}$ i.  
 Ol. cinnam.....gtt. xx.  
 Aq. dest..... $\overline{5}$ ii.  
 Tr. cardam. co. q. s. ft.  $\overline{5}$ iv.  
 M. ft. emul.  
 S.—A teaspoonful three or  
 four times a day.

## No. 56.

R.—Salol..... $\overline{3}$ ii.  
 Peps. sacch..... $\overline{3}$ ii.  
 M. ft. chart No. XX.  
 S.—One three times daily.

## No. 57.

R.—Benzoat ammon..... $\overline{5}$ ii.  
 Ext. hyoseyam.....gr. iv.  
 Aloin.....gr. iii.  
 M. ft. caps. No. XXX.  
 S.—One four times daily.

There are many methods of irrigating the bladder. I do not like the hand syringe, nor the Davidson pattern, for the reasons that it is easy to use injurious force, difficult to obtain a steady stream, easy to inject air, and such instruments cannot be readily cleaned. A glass douche that can be kept at any desired temperature, readily cleaned, one that can be raised to any desired height, regulating the force of the stream and preventing the admission of air, when the bladder is filled, gauging the amount of solution used; such a douche can be lowered below the level of the bladder and the fluid syphoned out, which also is marked upon the graduated scale.

Gradual dilatation of this portion of the canal by

the use of steel sounds run up from time to time to a number that distinctly stretches it, is treatment of great worth. The hot or cold sound will do much to improve nutrition and thereby restore integrity to the part. The negative pole of a weak galvanic battery acts much in the same way.

Ergot has been prominently prescribed for hypertrophy of the prostate, and various substances have been injected into it, all of which I have repeatedly tried with results far from satisfactory.

With the suggestions here made relative to this feature of the treatment of prostatic hypertrophy, one may hope to do service so long as the treatment is continued. For permanence of results surgery is called for.

I do not believe the value of certain operations upon the prostate are fully appreciated, which fact is largely due to the erroneous views, and want of clinic contact, of a class of genito-urinary workers, prominent in which list are Thompson, Guyon, Socin and others, who believed and taught, that the urinary trouble incident to hypertrophy is the result of senile changes in the bladder, and not dependent upon the enlarged prostate.

The indications for surgical treatment in prostatic subjects are, first, relief of urgent symptoms through local means, and general medication; second, to overcome the inconvenience and pain incident to necessary treatment; third, free drainage; fourth, the performance of such surgical operation that best secures a correction of the defect that is responsible for the suffering.

If, then, there be developed the so-called third lobe, acting as a valve at the neck of the bladder, making



urination difficult or impossible, a prostatectomy is indicated. By this is meant the opening of the bladder, either above the symphysis pubis, or through the perineum and the fibrous mass enucleated. A patient with this form of hypertrophy may be able to pass no urine at all in the proper position; in the knee-chest position the flow may start, an effort to void it may immediately stop the stream. Such a patient was operated upon above the pubes, a pear-shape mass, weighing about fifteen drachms, was removed, with perfect control of the urinary function as a result. I believe that this entire class of prostatics can and should be dealt with in this way. When a broadened and thickened mass of tissue constitutes the obstruction, there is no objection to the removal of such part as is accessible, and benefit will be proportionate. The operation through the perineum, while having the advantage of better drainage, and possibly less dangerous than the high operation, does not afford the room; and the removal of prostatic tissue is more difficult and uncertain. The two operations are identical in every way with the respective operations for stone in the bladder. The prostate is highly vascular, and prostatics, as a rule, are in poor condition; therefore, all work done, should be as rapid as consistent with thoroughness, and every precaution should be taken against hemorrhage.

Very good results are had by the establishment of a permanent drainage above the pubis, also through the perineum; there are many very competent men enthusiastic about this treatment. A few times I have drained from above, and many times from below; neither has been ideal. Many devices for drainage have been recommended; a low level drainage is the desired



aim of all such work; drainage from above the pubes certainly does not secure that end. Many times have I refrained from doing a prostatectomy on account of the debilitated condition of the patient, and have done nothing more than a perineal section, cutting deep into the substance of the prostate and placing a large size tube well down in the cut. I continue this tube for several weeks; every four to six days a large sound is introduced into the bladder through the meatus, stretching widely the prostatic urethra, such drainage enables the bladder to recover from the cystitis, and permanent good is almost always accomplished. The introduction of large sounds or dilators should be kept up every ten or twelve days for an indefinite period.

Recently double castration for prostatic hypertrophy has engaged the attention of surgeons, and very much work of this kind has been done.

Drs. White and Raum have been especially prominent; the statistics of White that were reported in a recent number of the *Annals of Surgery* are certainly very interesting. The novelty of the operation, the number of prosthetics, the character of the disease, and the ease of operation, led many into this work. Enthusiasm ran wild for a time, and many marvelous reports filled the journals. I am convinced from my own work, and the work of others, that many cases have been benefited, a few cured and practically none injured (in a physical sense), though mental impairment has undoubtedly been due to it in a very few cases.

To-day, I recommend this operation in those cases that fail to be benefited by the local and medicinal measures, when the organ is greatly enlarged and in such form that no projecting portion exists.

Double vasectomy, or ligation of the vasa deferentia, means respectively cutting and ligating the vasa deferentia. The result in either situation would be the same; this work is recommended by good authority, and good results have been reported. I have done this operation when the situation was suited to castration, but when the latter was objected to; it is a very simple operation indeed, and is almost devoid of danger. The incision recommended for variocoele is the one I make, the vas, secured and tied in two places, and a section removed. Healing is always prompt when the usual precautions have been taken.

## CHAPTER VII.

CHANCROID — DEFINITION — INCUBATION — ELEMENT IN—CLINIC  
FEATURES OF — FREQUENCY—DIAGNOSIS — PROG-  
NOSIS — COMPLICATIONS — TREATMENT.

### **Chancroid.**

Is a highly contagious venereal disease, presenting itself in the form of one or more ulcers. In this disease there is absent any well-defined period of incubation, twenty-four hours to three days is the usual time elapsing between exposure and the appearance of the sore. It is purely a local trouble and is never responsible for constitutional disease; its range of action is confined to the infected part or parts, neighboring lymphatic glands and the communicating vessels. By many it is called soft chancre (a term that is faulty for it is not chancre at all). Many chancres are relatively soft and indicate the existence of a disease (syphilis) as different from chancroid as one disease can be from another.

The infectious element in chancroid, is believed by many to be simple pyogenic micro-organisms (or pus producing micro-organisms), that chancroid may be produced from acne pustules, or from all sources where such microbes are found. For some time this position has obtained without question, I freely confess that I so taught and believed prior to the last three years; and if it be true that chancroid is due to such infection and not to an element of its own, then one must doubt his own work and observation. On account of limited space any extended discussion or pre-



sensation of this feature of chancroidal disease, must be omitted, I will say, however, that fifteen cases of typical chancroids found upon young men, who at the time were suffering from acne, inoculations upon the abdomen in two distinct places, one with pus from acne, the other with pus from chancroid, thirteen chancroid inoculations responded, while only three acne inoculations showed any evidence of inflammation, that under the same plan of local treatment, all the acne lesions were cured speedily, one respectively in four, seven and eleven days, that the chancroids healed much more slowly, that the sores did not develop alike, did not look alike, nor did they behave alike, under like circumstances. On account of such work as this, my opinion is that chancroid is always dependent upon a specific germ found in the secretion of a chancroid. Notwithstanding our inability at this time to produce the chancroid bacteria in pure culture, yet there is at hand abundant, and convincing evidence that such element does exist.

The feature of inoculability of chancroid proves its local nature and constitutes a valuable aid in differentiating it from chancre. Any mucous or cutaneous portion of the body is susceptible to chancroid infection. The genitals are most exposed, and any uncleanness, rawness, etc., increases their susceptibility. A chancroid, as it is ordinarily cared for, rarely continues as a single sore, for the discharge from the parent sore may infect any number of neighboring points, and as many chancroids will develop.

The clinical features of chancroid are displayed in table, page 43. Chancroid is seen three times where chancre is met once. This is due to the fact that chancroid is the more virulent; that it may be con-

tracted any number of times, while it is the rule, to which there are few exceptions, that chancre only appears once upon an individual.

The diagnosis of chancroid is not always an easy matter. When the history is unreliable, or when the lesion has been treated with caustics, sufficient inflammatory induration may be present to completely change the clinic picture (Fig. 47). Its recognition is im-

FIG. 47.



Chancroids that have become indurated, due to the application of chloride of zinc.

portant, for the correct interpretation of this disease is often the pivotal point upon which the individual's future depends. To pronounce a chancroid a chancre, and prescribe a syphilitic treatment, when such is not indicated, and cloud the life of a patient in this way, is a great wrong. To call a chancre chancroid, and deny the patient proper treatment for his syphilis, is likewise an unpardonable error. In all cases of doubt it is much better to delay the diagnosis until the lapse of sufficient time to develop corroborative and positive evidence.



**Complications and Prognosis.**

While chancroid is distinctly a local disease, it is one that predisposes to a variety of complications, and under certain circumstances becomes a matter of much moment.

On account of chancroids about the preputial orifice phimosis may ensue, due to inflammation and thickening; or to the production of inelastic scar-tissue after

FIG. 48.



Phagedenic Chancroid.

the lesions have healed; in like manner paraphimosis may result. Lymphangitis often complicates this disease. Bubo is frequent, which is painful, extensive and followed by suppuration. Gangrene and phagædena (Fig. 48), involving extensive areas and working great destruction, occasionally appears, hence the necessity of strict attention to treatment, and a prognosis duly guarded.

If, however, a chancroid be encountered upon the



person of a healthy individual, and prompt treatment be prescribed, the prognosis is very favorable. A cure under such circumstances may be expected within ten days to three weeks, while chancroid merely protected and kept reasonably clean will heal of its own accord within three to six weeks.

#### **Treatment.**

Chancroid is almost invariably of venereal origin; prophylaxis consists in the avoidance of sexual contact with women of doubtful virtue, and the use of antiseptic washes immediately after exposure. Weak solutions of carbolic acid, bichloride of mercury, permanganate of potash, and pure peroxide of hydrogen will do much toward preventing the development of chancroid.

When chancroid has developed the treatment may be abortive or methodic. By abortion is meant the application of a caustic in such a thorough manner that every atom of chancroidal virus is destroyed, and the resulting sore will be a simple one, which heals promptly by granulation.

To apply this treatment, the parts should be thoroughly washed, the lesion treated to peroxide of hydrogen, then to a ten per cent solution of cocaine until anæsthesia is complete. Nitric acid, chromic acid, sulphuric acid, chloride of zinc or the actual cautery may be used for destruction of the element; every sinus or infected part must be reached or failure is sure to follow. After the application of the caustic or cautery the sore should be cared for as will hereafter be suggested.

I believe the surest and quickest way to dispose of chancroid consists in preparing the parts as above, injecting a few drops of cocaine near the lesion, then with a small, sharp curette remove all trace of the infected tissue;

now with a stiff brush (a tooth brush answers) and a warm solution of bichloride of mercury, vigorously and thoroughly scrub the wound, after which pack with wet bichloride gauze and inclose with rubber tissue. This treatment in my hands has yielded most brilliant results. I have used it in the beginning of the disease and in those stubborn conditions where other treatment failed, or where gangrene or phagedæna was present or imminent. The dressing should be changed three times daily when this form of treatment is adopted. When phimosis exists and the chancroid concealed, those situations demanding circumcision or the dorsal slit, hesitating to operate for fear of infection though the situation demands such attention; I have often operated under these conditions without infection of the wound. I curette away, scrub the lesions and circumcise, with a stream of warm bichloride of mercury solution (1-2000) constantly playing upon the field of operation.

When the abortive measures are not indicated, or when objected to by the patient, the methodic treatment may be used, which consists in cleansing, and keeping clean the lesions and neighboring parts. The sores may be cleansed with peroxide of hydrogen or other antiseptic solutions and treated with wet or dry antiseptic or astringent remedies, the surrounding parts being protected against infection. Frequently such sores are extensive and painful; an ideal remedy in such situation is liquid campho-phenique; a pledget of cotton saturated with this and packed into such a sore, not only disinfects it and stimulates granulation tissue, but calms pain like magic. I have often controlled pain with this remedy when cocaine failed; in fact, in these situations it occupies a place alone in the therapy.

As a dry dressing, iodoform is good; owing to its



peculiar odor its use is limited, however, which by common consent seems to have become associated with venereal ulcers. In fact, I believe it an injustice to use this drug outside the hospitals and public clinics. A young man impregnated with this odor may lose his situation, his place in society and perhaps his self-respect.

Campho-phenique powder, made from carbolic acid, camphor, boric acid and acetanilid, is a splendid dry dressing; it has an odor, rather fresh and pleasant, similar somewhat to that of the moth ball (used in storing away clothing). Aristol is a very nice dry dressing, the objection to it being the disposition to form a hard crust, which retains the discharge. Calomel, bismuth subnitrate, boric acid, oxide of zinc, are very good. Often the parts assume an indolent nature and progress becomes arrested; it is well to apply every second day (after cleansing) a stimulating application. A solution of sulphate of copper, twenty grains to the ounce of water, nitrate of silver or sulphate of zinc, fifteen to twenty grains to the ounce of water, or what is still better equal parts of guaiacol, ichthyol and alcohol. Such applications may be made with a camels-hair pencil or with tooth pick and cotton.

The complications of chancre are treated along general lines, remembering the disposition of all open surfaces to become infected and control of the disease lost. If due regard be paid to the details as have been previously suggested, namely, thoroughly cleanse, destruction of the lesion with curette or with caustic, scrubbing and washing away all infectious elements, and closing all wounds securely, perfect union may be expected in a large percentage of cases.

My recent circumcisions, done in the face of chancroids, have shown a remarkable percentage of ideal results.



Nevertheless, it is my advice to delay all such surgery when it can be safely done, until the parts are free from chancroidal disease.

About one-third of all chaneroid patients develop bubo, and whenever suppuration occurs, an opening is either made by nature or by the surgeon for the liberation of this broken-down material. In either event, there is inflicted upon the patient a compromising scar, a defect or blemish, which in after life becomes a source of great humiliation. A young wife will inquire about such a scar, which will either force a confession or a falsehood. In dealing with buboes, regardless of their source, it is well to remember the importance of sparing the unfortunate a scar of this kind.

At this moment I am convinced that suppuration in chancroidal buboes may often be obviated; rest, the application of cold, and light compression, together with complete and constant disinfection of the sore or sores that are responsible, will often succeed.

I place much greater reliance in disinfection of the lesions, and the early injection of the bubo with pure carbolic acid. My notes bearing on this feature of chaneroid show that suppuration has been prevented in seventy per cent of such cases. Quite often twenty drops of carbolic acid has been injected into a large and highly inflamed lymphatic gland, in the center of which pus had already formed; a week later the gland was removed and the center of the gland was found to be hard and cheesy, with suppuration in other parts. Into the center of a small and recent bubo, I inject fifteen drops of pure carbolic acid; into larger tumors, twenty to thirty drops; pain is relieved at once by it, and very often the tumor ceases to enlarge, remains stationary for several days, and then slowly disappears; it may be months before this indurated

spot is entirely gone. Tincture of iodine may be used to paint the bubo. I have yet to be convinced of its value. Campho-phenique will often relieve pain and possibly do additional good. Equal parts of ichthyol, guaiacol and alcohol painted over an inflamed and painful bubo is soothing; hot flaxseed poultices, hot water bottles, etc., encourage suppuration and relieve pain.

A bubo may be removed, which is a ready way to cure it; it is much to be preferred to lancing. The skin is incised over the tumor down to the capsule of the gland, the finger detaches the body from the surrounding parts and the tumor is lifted out, the part washed and closed; if the gland has broken down, it may be well, after thorough cleansing, to pack the wound; bring the gauze out the lower angle, then close the wound and remove the gauze after twenty-four to forty-eight hours. Often patients object to such measures; when hot applications are made until pus forms, which is let out with a bistoury, and the poultice continued until suppuration ceases. Chancroid is common and severe among the lower classes; with the half-fed and badly kept, the alcoholics, the tuberculous and physically depraved it plays sad havoc. When encountered under such circumstances, it is important that good food and air, good clothing and apartments, tonics, etc., be made a conspicuous part of the treatment. The bowels should be regulated, sleep secured, and those measures instituted that tend to general upbuilding of the physical forces. I have used anti-streptococcus serum in the treatment of chancroid with indifferent results.



## CHAPTER VIII.

DISEASES OF THE KIDNEY—PYELITIS—HYDRONEPHROSIS—KID-  
NEY STONE—CANCER—PYONEPHROSIS—TUBERCULOSIS—  
SYPHILIS—FLOATING KIDNEY—PERINEPHRITIC  
ABSCESS—TUMORS—NEPHRORRAPHY—  
NEPHRECTOMY—NEPHROTOMY.

### **Pyelitis.**

Inflammation of the pelvis and the calices of the kidney is called Pyelitis. This disturbance may be acute, oftener chronic. Like other diseases of the urinary organs it is dependent upon other conditions for existence. Gonorrhœa affords the largest number of acute attacks. Any obstruction to the escape of urine or any inflammation in the bladder can be responsible. The formation of stone in the pelvis of the organ may, by its irritating presence, light up inflammation. A small stone blocking the ureter, or the same in the bladder, may act in a like direction. The occlusion of the ureter in pyelitis, from stone or other causes, preventing the escape of the fluids from the pelvis of the kidney, resulting in a dilated and fluctuating state of the organ, is called PYONEPHROSIS. Tuberculosis, cancer, hydatid tumors and parasites, may be the underlying cause. Pregnancy is very often productive of this disease on account of undue pressure.

The turpentine group of drugs, carbuncle, certain forms of pyæmia, and some of the eruptive fevers are given as causes. The disease may be limited to one kidney, or both may be affected.



### Symptoms.

In some communities there is a belief in the mind of the laity that all pain in the back, and all disturbances of the urinary organs are indications of kidney disease. Such an opinion is readily understood, when informed that their knowledge is based upon information offered by the family almanac, or the literature of the advertising quack; yet my observation of this organ in post-mortem work leads me to believe that diseases of the kidney are of greater frequency than formerly supposed.

In pyelitis there is pain and tenderness over the diseased organ, this pain may be a dull soreness, that is only developed from pressure, or it may be sharp and neuralgic, and reflected some distance beyond the kidney area. If the disease be due to kidney stone, usually paroxysms of nephretic colic will have been suffered. The passage of a small stone down the ureter, with its sharp and angular corners cutting as it goes, will produce pain so severe that the patient will be unable to find language expressive, he will roll, scream, and may become convulsed. Following such an attack, there will be blood mixed with the urine. If there has been obstruction to the kidney the organ becomes enlarged, sacculated, and can be easily palpated. The retained pus will express itself with chills, fever and sweat, which may resemble malaria, but evidences of pyæmia will arise which will deepen to a fatal issue, except relief be had. Through the urine much information can be had; it is acid in reaction, blood, mucous, round and spindle epithelial cells, and traces of albumen are presented. When voided it is heavy, of a uniform greenish, turbid color. When permitted to stand the pus gravitates to the bottom, the reaction remains acid unduly long. When one kidney is diseased there may be distinct changes in the urine from

day to day. Should the ureter become plugged for a time, the clear urine from the healthy kidney would not be mixed with the product of its diseased fellow, and the urine passed may appear normal. Again, when the kidney becomes sacculated, relatively the same urine changes will occur. Perinephretic abscess may result from such a disease of the kidney, especially if due to stone with obstruction, tuberculosis or the presence of parasites.

Very recently I removed a wasted kidney from a woman who had suffered a gradual decline in health for two and a half years, on account of a small stone becoming engaged in the uretral orifice. The tumor had been opened in the loin, and an infected fistula remained giving exit to pus and urine. The operation was done to overcome the septic condition of the patient and rid her of the embarrassment and annoyance resulting from such a fistula.

The cystoscope is a very valuable aid in diagnosis here. With this instrument, and the bladder thoroughly and carefully cleaned, the turbid stream of urine from a pyelitic kidney can be seen very distinctly as it enters the bladder. The claim is made that the ureters may be catheterized and the urine collected from either organ. I must confess that this is exceedingly difficult in the male, though quite easy in the female. The X-ray may be used in case of stone. The ureter may become twisted or plugged, or some lower portion of the canal may become occluded in a variety of ways and produce accumulation of urine in the kidney. This may increase until an enormous tumor or cyst is present. Such a disease or condition is known as Hydronephrosis.

The urine from a diseased kidney inhabited by parasites should be carefully examined microscopically, and opinion is to be based upon such evidence.



### Treatment.

When a diagnosis of pyelitis is reached, diligent search should be made for an underlying cause. Should there be urethral, prostatic or bladder disease, the treatment suited to such should be prescribed; during which the kidney itself should receive such attention as the urgency of the situation demands, in all cases rest, regulation of diet, stimulation of the skin in the forms of hot baths, friction, etc.; the bowels should be made to assist the skin in relieving the kidney of its work. Such remedies as benzoate of soda, benzoic acid, salol, borax, etc., may be used to stay decomposition and maintain the urine in good form. Should the attack be due to a fever, carbuncle or other poison, the treatment would be that of the original disease augmented by the above.

Should stone in the pelvis of the kidney or ureter be responsible, nephro-lithotomy should be performed. The treatment of cysts, pyonephrosis, hydronephrosis and perinephritic abscess should be removal of the cause when possible, and nephrotomy.

When tuberculosis of the kidney is suspected, and assurance that the disease is limited to one organ, the other being free from all disease (which is exceedingly difficult in males), and there is not general tuberculosis, an exploratory incision is justified. Should the organ be found in such a state, being no longer of service as a urinary body, its removal by lumbar nephrectomy is warranted, otherwise the usual recommendations of climate, diet, etc. The greatest care and conservatism is here called for; it has happened that the only kidney was removed, or a diseased one left. From the great number of worthless kidneys, and the hypertrophied condition of the opposite one, found in post-mortem examinations in persons who died from diseases of various kinds, and who



did not complain of kidney disease, I am well convinced that one healthy kidney, properly encouraged, is able and willing to perform double service.

Cancer of the kidney is treated surgically. Nephrectomy, if done early, and the disease be primary, holds out much inducement. The serum treatment in my hands for malignant disease of the kidney has failed.

Other tumors of the kidney require palliation, evacuation or removal; their size, nature and symptoms being duly considered.

#### **Surgery of the Kidney.**

Quite an impetus has been given work of this kind in recent years. Under strict surgical conditions, with reasonable care observed, in the selection of cases, the kidney can be explored, opened, fixed and removed with ease and comparative safety.

The operation of nephrotomy consists in making an incision from behind, obliquely forward of three to four inches in the ilio-costal space. Beginning in front of the erector spinæ muscle, and far enough below the last rib to avoid the pleura (one-half to one inch), the dissection is carried down until the muscular layers are separated, the lumbar fascia is divided and the fatty capsule of the kidney is reached; this is best torn by forceps or with the fingers. (Adhesions are often numerous and firm), the kidney, if containing pus or other fluid, is now punctured with trocar, emptied of its contents, then opened and searched, especially for stone. It is better to incise the substance of the organ than the pelvis. The opening into it should be sufficient to admit a complete search. The ureter may be explored if necessary. The edges of the organ may be attached to the wound and the part packed with gauze, or, if the incision into it has been large, and

the integrity of the organ good, with the ureter free, the wound in the organ may be closed with a few sutures, the field of the operation cleansed, and the whole closed up.

#### **Nephrectomy.**

By this operation the kidney is removed. It is applicable in those instances, where nephrotomy has failed, or when it is desirable to remove the organ primarily. The kidney may be reached through an abdominal incision which is best suited for the operation, when cancer or other solid tumor of the organ renders it of such size that the lumbar route is not sufficient to admit it; but for most purposes the lumbar is employed, it being easier, more simple and less dangerous. (The peritoneum is not touched in this latter operation.) An incision very like that employed in nephrotomy is made down to the organ, a second liberating incision at right angles, and downward from the posterior beginning of the first incision (to gain additional room) may be made if necessary. The capsule of the kidney is stripped off with the fingers, the organ raised, two ligatures are passed about the ureter, and two, including the renal artery and vein, and the vessels in this way securely tied in two places. Between these two sets of ligatures, the parts are divided, the ligatures cut short and the stumps dropped back, the part cleansed, closed, or packed, as the condition suggests.

#### **Nephrolithotomy.**

Is the operation of removing a stone from the kidney. The organ is reached through the lumbar incision described for nephrotomy, the kidney opened through its secreting portion, as opposed to the pelvis, and the stone removed with fingers or forceps. The after treatment is that of nephrotomy.

**Floating Kidney or Movable Kidney.**

While the above terms are used interchangeably, yet there is a distinction. The normal position of the kidney is behind the peritoneum, and its attachments allow but slight movement. In floating kidney the organ is found in the abdominal cavity, and is enclosed in a peritoneal covering called meso nephron.

Movable kidney is that lax condition of the renal attachments permitting an undue movement of the organ behind the peritoneum. The condition may be inherited or acquired, more often the latter. Ninety per cent of cases are encountered in women. Tight lacing and child-bearing being given as causes; all violent efforts calculated to dislodge, or disturb its support, become factors in its causation. Tumors dragging it down may be responsible. The symptoms of such displacement are pain and nervousness, either, or both of which may be paroxysmal or constant. Should a twist in the ureter result, there would be added all the symptoms of occlusion. For the correction of this state many devices in the form of supports have been produced; rarely is the use of such followed by relief.

Nephrorraphy, an operation for reducing and fixing the organ, is usually successful. It is an operation of no great danger, and one rather easy to perform. The kidney is reached through an incision identical with that recommended for nephrotomy, the fatty covering treated by tearing through, the organ is seized, about four substantial silk sutures are passed through its substance, at a depth sufficient to hold, and secured to the edges of the wound. (Silk worm gut has given excellent satisfaction; the sutures are anchored upon either side of the incision with plate and shot, and removed about the twelfth day).



**Syphilis of the Kidney.**

During the eruptive period of syphilis there may be urinary changes that pass away as the eruption declines, in all respects similar to such disturbances found associated with other exanthematous processes.

Late in the disease the cortical zone can be the seat of a gumatous deposit (firm and nodular). There may also be found a chronic interstitial inflammation of syphilitic origin.

A diagnosis should be based upon the history, and by elimination of those other well recognized conditions that resemble it.

The treatment is that of the original disease.

## CHAPTER IX.

STRICTURE OF THE URETHRA — DEFINITION — VARIETIES —  
CAUSES—PATHOLOGY—DIAGNOSIS—TREATMENT—  
COMPLICATIONS.

From the anatomy of the male urethra it is learned that the canal is not of uniform size throughout. Narrow places are provided by nature for a purpose. Stricture, then, is any unnatural narrowness of this canal. Sir Charles Bell has advanced a definition that many prefer: "Any lack of dilatibility of the urethra is stricture." This definition, in the light of modern thought and learning, is faulty.

All strictures may be grouped under two headings, spasmodic and organic; the latter may be inherited or acquired.

The form of stricture called spasmodic, while it answers the definition, yet it is distinctly different from the organic; it is nothing more or less than the undue exercise or reaction of the urethral muscles. It is rarely the cause of trouble in the sense of stricture.

There are times when almost every individual experiences it, or in whom it can be detected, and for which treatment is rarely, if ever, indicated. There is good authority for the statement that any portion of the urethra may be the seat of this form of stricture. I have never seen muscular spasm produce obstruction anterior to the bulbo-membranous portion. In examinations upon persons not accustomed to urethral exploration, it is very

rare not to notice spasm of the cut-off muscles; indeed, I always anticipate a slight pause here; again, the vesical sphincter may act in a like manner.

There are many causes given for the appearance of this spasm. The nervous temperament, I am inclined to believe, deserves first place, especially those whose sexual appointments know no rest or relief.

Any diseased condition of the urine or urethra, some of the reflexes, especially from the rectum. A ligature applied to a hemorrhoid has very often excited this muscle to a spasmodic state, making urination impossible.

Fear, shame and modesty will produce it. Young men at my clinics, brought into the presence of a class of medical students, and even in my private office, will often fail to void urine except they retire to an unobserved place.

The treatment will consist in correcting the trouble that underlies the condition. Free purgation may relax the spasm. Prescriptions 58 and 59 may be useful:

## No. 58.

R.—Liq. pot. arsen.....℥i  
 Sodii brom .....℥iv  
 Tr. hyoseyam.....℥ii  
 Aqua cinnam.....℥iv  
 M. ft. sol.  
 S. A teaspoonful in water  
 every two or three hours.

## No. 59.

R.—Strych. sulph.....gr. i  
 Ext. stramon. pulv.....gr. xii  
 Pulv. ipecacuan.....gr. iii  
 Pulv. aloin.....gr. vi  
 M. ft. pil. No. LX.  
 S. One pill after each meal.

If the urine is acid, the alkaline diuretics are indicated. Very often the sound and sight of a stream of water will relieve it. Hot baths, a few drops of cocaine solution injected into the urethra may be sufficient; a hot rectal injection is servicable. It may be necessary to pass a catheter.

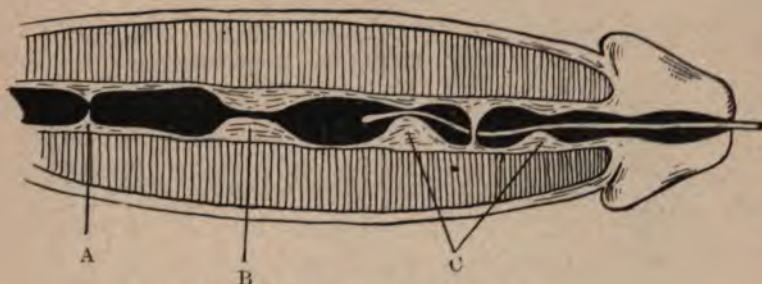


**Organic or True Stricture.**

As before stated, stricture proper may be congenital or acquired. Those irregularities that appear at birth as imperforation or artesia, have been referred to. Any other congenital obstruction, taking the nature of a true stricture, can be dealt with as though the same had been acquired.

True stricture may be single or multiple; it may exist in the form of a thin narrow partition, with its aperture anywhere upon its surface, in which instance it is called linear (Fig. 49, A). It may involve more of the urethral

FIG. 49.



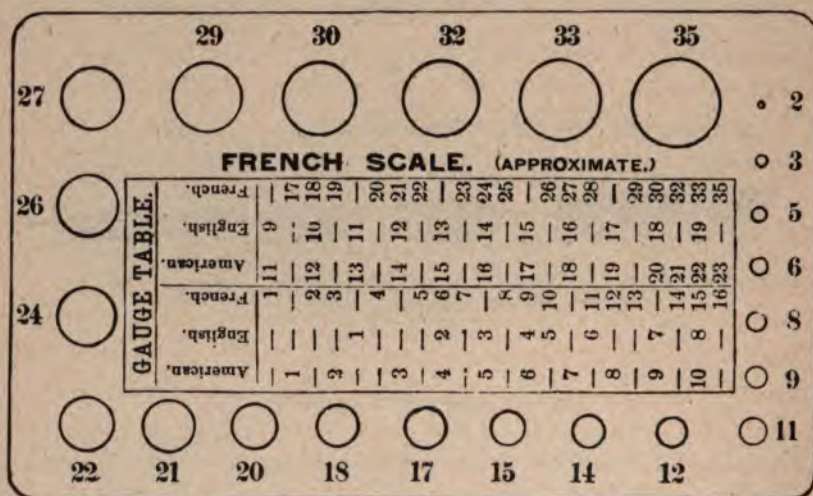
Organic strictures of the urethra.

surface, be a thicker or broader obstruction (Fig. 49, B), which condition is called annular stricture. A considerable portion of the canal may be taken with such disease, the greater part of the urethra, especially that portion anterior to the peno-scrotal angle, may become filled with a hardened, inelastic tissue, through which the canal may run as a narrow, irregular, tortuous passage. This form of stricture is called tortuous (Fig. 49, C). A single stricture is the rule, two are frequently found, three very rarely, and four extremely seldom.

Dr. Otis has formulated a table which accords with my own views, from which a fair idea of the capacity of the

urethra can be had. Quite often the rule will not be found applicable. When the circumference of the flaccid penis measures three inches, the urethra should comfortably receive a No. 30 French sound; when three and a quarter inches in circumference, a No. 32 French sound; when three and a half inches in circumference, a No. 34 French sound; when three and three-quarters inches in circumference, a No. 36 French sound; when four inches in circumference, a No. 38 French sound, and so increasing

FIG. 50.



as the circumference increases. Fig. 50 is the French scale or measure for urethral instruments. This scale also affords a comparison with the English and American scales.

When radical deviations from the table of Dr. Otis are discovered, unnatural caliber is in evidence.

Any portion of the urethra may be the seat of organic stricture. About twenty per cent are found in the first two and one-half inches of the canal; about fifteen per cent in the next three inches, and about sixty-five per



cent in the remaining portion of the spongy urethra. Seldom is stricture found in the membranous or prostatic portions of the urethra.

#### **Pathology.**

The portion of the urethra engaged in stricture may show upon examination a hardness, resembling cartilage or cicatricial tissue. Again, the lesion may be a thickened and granulating condition of the mucous membrane; if more recent still, the site may merely exhibit a low grade of inflammation. In all stages of development there will be evidence of present or past proliferation of connecting tissue elements, and more or less inflammation will be found either in the mucous membrane or immediately beneath it, or in both; the resulting lesion will be soft, supple or hard.

#### **Cause of Urethral Stricture.**

From the pathology it is evident that any influence capable of exciting inflammation or capable of disturbing normal nutrition of any part of the canal, may be the cause of stricture. As a factor acting in this direction, gonorrhœa is especially prolific; quite seventy-five per cent of all the cases of organic stricture are due to it. Non-specific urethritis acts in the same way; being a less violent inflammation and running a more rapid course, it is proportionately less severe in its consequences. Those attacks of gonorrhœa that continue an undue period, whether this be the fault of the patient or the treatment he receives; situations where chordee, abscesses, congested areas, ulcerated patches and the many complications that continue the attack, are especially liable to lead to the formation of stricture. There is a popular belief that not to the disease, but to the remedies used, is stricture due. This opinion, while in the main is incorrect, yet any caustic injection applied to the urethra, capable of producing



extreme burning pain that lasts longer than ten minutes, is injurious, and any injection that produces hemorrhage, or one followed by exfoliation of mucous membrane, in criminal, for certainly such applications can and do produce a cell proliferation, ending in stricture. Prolonged and unrelieved congestion occurring in young men whose minds are ever upon matters sexual, may cause stricture.

Electricity employed within the urethra, for various purposes, has resulted in stricture. Within the past year I have performed urethrotomy, either internal or external, at least eight times for very extensive and firmly indurated strictures that I had every right to believe was due to galvanism of the urethra, the cases being typical representatives of the neurasthenic class, in whom there had never been urethral disease, and five of whom no sexual relations had ever been indulged in.

Traumatism furnishes its quota; breaking the chord in chordee; while not practiced to-day to its former extent, nevertheless means a stricture for each offense. That portion of the canal passing through the triangular ligament is especially liable to injury. Falling astride a carriage wheel, kicks or blows upon the perineum, any form of violence that is inflicted or bears upon the urethra can be responsible for stricture. Whenever a stricture of the membranous urethra exists, a traumatic history should be expected. The improper use of surgical instruments have been known to produce stricture.

The two most interesting traumatisms that I have treated were cases, first, where a man in oiling overhead machinery, slipped and fell astride a set of revolving cog wheels, the penis became engaged together with the scrotum, the greater part of both destroyed and the urethra cut in two places. External urethrotomy succeeded in saving the parts, though a second operation for

stricture was necessary a year afterward. Three years have passed and the patient can pass a No. 20 French sound, which he does every two weeks.

The second case was that of a farmer while in a stooping position (repairing his scythe), his hired hand, who was mowing from behind, struck him with the point of his scythe, laying open the posterior portion of both thighs, the point of the scythe dipping in and cutting off the urethra posterior to the scrotum. The urethra was opened in this case behind the transverse cut, and the scythe wound approximated, after union of which the longitudinal incision was permitted to close and sounds passed every fourth day. In the face of close watchfulness by his family physician, contraction of the scythe wound progressed; at eleven months from date of injury the largest instrument that could be passed was a No. 18 French. At this time stricture complications in the form of bladder inflammation developed and a second external urethrotomy was done. A year and a half has now passed since this last operation and I am assured that there is no trouble. A No. 31 French sound is now used without difficulty.

The different vocations of man make it impossible to individually mention all the types of injury possible here, that may result in organic stricture.

The time required for stricture to develop to an extent that attracts attention, is variable, especially when due to gonorrhœa. An attack of this disease may not be terminated before stricture has started, and become responsible for the prolonged discharge. About fifty per cent of strictures develop during the first year following urethral disease, about twenty-five per cent during the second year and the remaining twenty-five per cent develop later, some recorded as late as twenty-five years. Injuries that are to



result in stricture, do so at much earlier periods; if an injury is done the urethra and there is no resulting obstructions within six months, the patient is rather secure against the development of stricture. Strictures, whether due to urethral disease or traumatism, may be Resilient or Irritable. These qualitative terms mean respectively elastic (behaving as if made of rubber), or irritable (excitable); should an instrument be passed through a resilient stricture, it would at once contract to its former or even smaller size. Should an instrument enter an irritable stricture, it would be sensitive, it would inflame, and be made worse on account of such treatment.

#### **Symptoms of Stricture of the Urethra.**

Not every stricture is attended by symptoms. A stricture of moderate tightness may exist, the urinary and general health may continue good, and no knowledge or notice of its presence is had. While this is undoubtedly true, and many have lived a life time and died of other diseases, not being aware of urethral obstruction, yet the existence of a stricture, no matter how trivial it may appear, is a constant menace to good health and longevity, and the possessor is never safe from consequences most serious. It is usual, however, for such sufferers to be annoyed though the subjective symptoms are not constant; there may be pains of a neuralgic nature in the penis, perineum, back and bladder, if the stricture be so pronounced as to call for great effort in forcing the urine through.

This straining may provoke a fullness of the hemorrhoidal vessels and an attack of piles or prolapse of the rectum be brought on. Hernia might result from the same cause.

A blue and pale appearance of the meatus is frequently noticed where stricture is present, due to the disturbance



of circulation. A mucoid or gleet discharge is rather a constant symptom. Shreads passed with the first urine, which fall to the bottom of the glass, are rather constant in stricture. Hard areas at the site of stricture, the sexual organs are affected, the stream of urine is diminished in size and is twisted, ejaculated semen is not delivered in normal jets, but remains posterior to the obstruction to find its way out, little by little, or with the urine. As the obstruction advances the straining is increased, the urethra, immediately behind the stricture, becomes dilated on account of the great pressure of the urine against the lesion, a few drops of urine remaining, develop ammonia products, inflammation of the part takes place in consequence of this decomposed urine, the mouth of the urethral follicles are opened as the urethra is stretched, unclean matter finds lodgment and a septic process is developed therein. Inflammation travels backward, infecting in turn the areas invaded, the neck of the bladder and deep urethra are attacked; there will now be urgent and constant desire to pass water, the bladder proper may become involved, trabeculæ, sacculation or contraction of the bladder by inflammatory thickening may result. Should retention of urine occur, which is always in order, the bladder may become over-distended; if unrelieved, paralysis and dilatation is to be feared. Such a state as this greatly jeopardizes the kidneys. Many attacks of pyelitis have an origin of this kind. The urine is always altered; aside from the shreads resembling cob-webs, which soon sink to the bottom of the glass, mucus, pus and blood are rather constant attendants to a well advanced stricture that has developed cystitis.

#### Complications.

As a result of stricture, all parts of the uro-genital organization may be directly or indirectly diseased, and

what has been said in regard to the spread of the infectious agents to all these parts, applies as well here. Rupture of the urethra, followed by extravasation of urine, is a complication that often entails much suffering and disfigurement. The urethra, behind a narrow stricture, is

FIG. 51.



Gangrene, following infiltration of urine, due to rupture of the urethra from stricture.

dilated by forcible efforts at urination, its walls become thinner and correspondingly weaker. The infected follicles found in such a location favoring, until the walls can no longer resist the pressure and rupture follows, the region about the urethra becomes filled not only with urine, but with the unclean products, containing ammonia salts,



bacteria, pus, blood, etc. Very soon the integrity of the parts invaded by this offensive material begin a process of tissue necrosis, and a slough with loss of substance proportionate to the extent of the infiltrated area takes place. Fig. 51 is just such a case. Fistulæ follow in the course of such destruction. A fistula may also develop from abscess formation in the diseased and open follicles; at first there is a drop of pus, the pressure of the urine and nature of the inflammatory extension carry it deeper and deeper until the urethral walls have been penetrated. The little abscess may point and open, leaving a fistula marking its course; occasionally several follicles pursue such a course and numerous fistulæ result.

Infiltrated urine may locate itself in a number of places; it may be confined within the limits of Buck's fascia and if the urine be free from unclean matter, it may remain in this location without producing much damage for many days, or it may present near the corona glandis and leave a fistula opening here. It may leave the urethra posterior to the triangular ligament, and pass into the pelvic cavity; or anterior to the triangular ligament and present in the perineum or scrotum. Such complications demand very prompt and active measures. Liberating incisions, to divest the parts of their hurtful occupants, thorough cleanliness, warmth to prevent all possible gangrene, external urethrotomy, tonics, stimulants, the best food and hygienic surroundings. Stone in the bladder is often due to stricture.

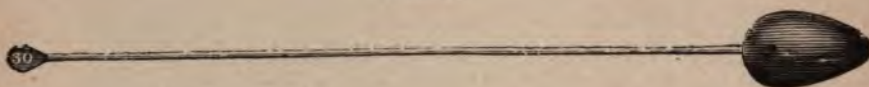
#### Diagnosis.

A patient will perhaps complain of a slight but persistent discharge, a narrowed or irregular stream, irritability of the bladder, an uneasy feeling in the urethra or any of the symptoms previously enumerated. He will give a



history of urethral disease, traumatism or some form of disturbance, yet with all the symptoms of stricture complained of, and a perfect history of urethral disturbance, the surgeon is not justified in making a diagnosis of stricture, no matter how complete the case may seem. History and symptoms are servicable only so far as directing the attention to the parts, a diagnosis rests wholly upon urethral instrumentation. The examination now indicated should be arranged for and conducted in the following manner:

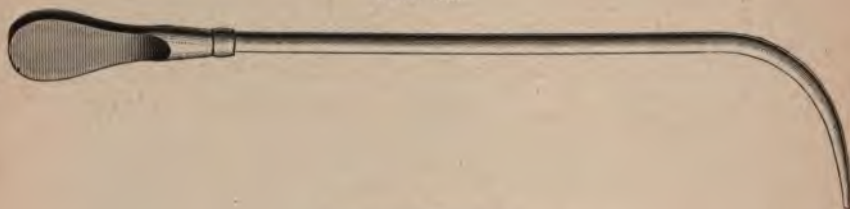
FIG. 52.



BLEES-MOORE INSTRUMENT CO.

Bulbous Sound.

FIG. 53.



BLEES-MOORE INSTRUMENT CO.

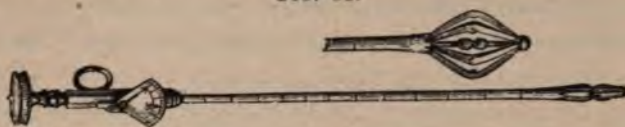
Conical Steel Sound.

Certain instruments become a necessity; a very few simple ones will answer the purpose of deciding whether or not a stricture is present. In fact, a single medium-sized English catheter very often is all that is required to gain this knowledge. It is important in such situations, not only to know if there be a stricture, but all other important facts.

The size, the texture, the extent, resiliency, or irritability if such exist, and for the accomplishment of such investigation the following instruments should be at hand

and in a state of surgical cleanliness; a set of bulbous sounds (Fig. 52), ranging from No. 10 to No. 30 (French scale), a set of steel sounds (Fig. 53), of similar sizes, a

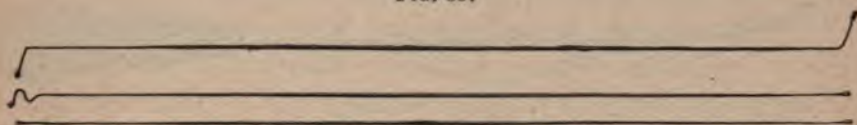
FIG. 54.



BLEES-MOORE INSTRUMENT CO.

Otis' Urethrameter.

FIG. 55.



BLEES-MOORE INSTRUMENT CO.

Whalebone Filiform Bougies.

FIG. 56.

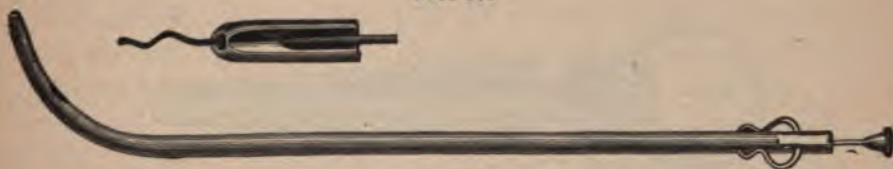


SHEPARD-DUDLEY, N.Y.

BLEES-MOORE INSTRUMENT CO.

Gouley's Tunnelled Catheter.

FIG. 57.



BLEES-MOORE INSTRUMENT CO.

Tunnelled Catheter.

urethrameter (Otis pattern) (Fig. 54), is a convenient one; ordinary French flexible bougies, several sizes, ranging from No. 4 to No. 20; at least half a dozen filiform whalebone bougies (Fig. 55), at least three sizes tunnelled

sounds and catheters (Figs. 56-7-8) Nos. 8, 12 and 20, French; a deep urethral syringe (Fig. 59), an ounce of a five per cent solution of cocaine, and a tube of sterilized vaseline. With the bladder empty and the urethra cleaned, the patient is put upon his back,

FIG. 58.



BLEES-MOORE INSTRUMENT CO.

Gouley's Tunnelled Sound and Guide.

FIG. 59.



BLEES-MOORE INSTRUMENT CO.

Deep Urethral Syringe.

FIG. 60.



BLEES-MOORE INSTRUMENT CO.

Piffard's Meatometer.

legs slightly separated, the meatus is measured with a meatometer (Fig. 60), and a flexible stem bulbous sound (tested to see if the bulb is securely fastened to the stem) of a size that the meatus will comfortably take, is selected,



this is oiled and slowly passed down the urethra. When the pendulous urethra has been traversed and the curved urethra reached, it is expected that resistance will be met by the action of the muscles in this region, again its progress may be arrested, due to the instrument being straight; here the canal is curved and demands that sufficient pressure be applied to the flexible stem to force it into the curve.

The fingers of the left hand may follow the bulb of the instrument the entire way, the object being to elevate the bulb as it enters the deep urethra (thereby having the stem curve upon itself to meet the urethral curve.)

The finger on the outside, elevating the bulb with pressure upon the stem, forces the instrument into proper form and the remaining journey to the bladder is accomplished. As the instrument is withdrawn, the action of the vesical sphincter, and the compressor urethræ muscles will be very distinct, and so with all irregularities encountered. With a roomy meatus, if a No. 25 bougie will pass, a No. 30 steel sound should be applied, which will more readily enter the bladder than the first instrument; should this instrument pass, then a full size sound should be used, if this latter instrument be received by the urethra, it justifies the opinion that no stricture exists. Should the first instrument be arrested at the beginning of the fixed urethra and reasonable coaxing fails to have it go deeper, a conical steel sound of equal size should be used and after diligent effort (not force) it fails a smaller size should be tried, say a No. 20, should this fail to enter a No. 15, soft, olive-tipped bougie should be tried; this failing, smaller sizes in turn may be tried, scaling down to the filiform if necessary. When the bulbous sound has failed to pass this or any other portion of the canal under such manipulation, the diagnosis of stricture is reached. If a

No. 25 bulbous sound fails and a No. 25 conical steel instrument succeeds, we conclude that the opposition to the first was muscular spasm, which was overcome by the second instrument. If the meatus will take a No. 32 sound and an obstruction is found that will not admit a No. 25 or No. 30 flexible stem bulbous bougie, but will receive a No. 25 conical steel sound and no larger, we know that there is both muscular and organic stricture. Now, if a No. 20 flexible bulbous bougie is selected and passed through the obstruction, the behavior of the bulb while in relation to the stricture, which is manifested through the sense of touch and observance of the stem, both in passing over it and its halting, and jumping movements, while withdrawing, affords a very clear idea of the extent and character of the lesion. The urethrometer may be conveniently used for this purpose, especially when the meatus is small, adjusting it to a size that will pass all obstructions and noting the indicator as it engages in the stricture. What has been said relative to obstruction of the urethra in this region applies to all other parts of the canal. Muscular stricture is only to be considered in the region of the compressor muscles, all other constricted areas which may in this way be detected are organic.

The meatus is the smallest part of the canal. If the meatus readily receives a No. 32 sound, and some deeper portion of the urethra will only admit a No. 25 or No. 28, though the difference be a slight one, a stricture is diagnosed. Should an average penis with a small meatus (the meatus having been cut to No. 35) receive with comfort a No. 32 or No. 33 sound for one or two inches and at a deeper point the instrument be unable to pass, but one a few sizes smaller does pass, then, too, will there be a stricture. In a word, when by the proper use of the instruments mentioned, an area of unnatural narrowness of



the urethral canal is found, the diagnosis of stricture is a fact, and unless obstruction be actually located by such means, such disease cannot positively be said to exist.

#### **Treatment of Urethral Stricture.**

In this field fads, fancies and fanaticism are clearly attributes of our profession. Very much work has been done highly tintured with sentimentalism. Almost everybody claims, hopes and presumes to be competent to treat stricture of the urethra, and there are very many who never refer such cases to proper sources until a time when they are no longer able to content them. Many shining meteors from the uro-genital firmament have quickened into the dazzling, shot into space, sizzled, sputtered, and had their fuse burnt out just as the world had retired to a safe distance and become ready to look on with wonder, such has been the enthusiasm of one class; while the pendulum of the other has swung back to a low conservatism, and as a result the two superlatives stand staring at each other. The essentials for proper treatment of this condition demands a satisfactory knowledge of the anatomy and physiology of the parts involved. Their condition in health and disease should be known.

The pathology of stricture and those complications that render this subject so deserving of understanding should have been studied. All workers in a given cause must of necessity live for a greater or lesser time in the formative, realm. It is unfortunate that the first efforts of so many, is the invention of a new urethrotome, the overthrow of older ideas, or the construction of new and radical plans for the cure of stricture of the urethra, for in this connection there can be no stereotyped rule; each case is a study and should be met with recommendations that are reasonable. I have been induced to try almost everything that bore the slightest evidence of merit, and



have thus far continued unbiased in my conclusions. I am therefore prepared to give it as my opinion that there are no urethral injections that in the least, favor the disappearance of stricture, no direct application of powders, or ointments, that will be of service, no suppositories can be depended upon and no mineral waters have the power to melt them away. I am sure that there are several ways of disposing of stricture, methods that are safe, and when properly carried out return results most brilliant. I believe stricture of the urethra, wherever situated, regardless of its cause or extent, can always be benefited and often perfectly cured. The armamentarium of the surgeon doing this work need not be so extensive, but such operations should not be undertaken without proper provision, those devices that will be referred to in this chapter are imperative. Strictures of the urethra can often be cured by gradual dilatation, by this is meant the regular and prolonged use of the conical steel sound. Strictures anywhere in the canal that have not become firmly organized, not irritable, or resilient and not at the time the cause for much suffering, are often best treated by the use of the sound gradually run up to the full size, thus if stricture be diagnosed and a No. 12 or No. 15 soft catheter will pass, a No. 15 or No. 20 steel sound will be received.

Should this amount of instrumentation be followed by comfort, there being no hemorrhage and no material inconvenience in voiding urine after the first day, a No. 22 sound may be passed on the fourth day. Should soreness continue three or four days after urethral manipulation, or there be some blood passed with the urine, it is best to prolong the interval between the applications. Usually every four to eight days is proper, thus by a gradual in-

FIG. 61.



Gouley's Dilator.

crease in the size of the sound, the urethra in the course of five to twelve months may be brought to a state of health.

When the largest sound that is to be used has been reached, which will usually be a No. 30 to No. 33 (which will require two to three months), this particular one should be continued (lengthening the intervals as the urethra may allow) for at least three months after all disposition to recontraction of the strictured area is passed.

The advantages of this treatment are, that it is simple and if the instruments used are clean it is perfectly safe; it will neither confine the patient to his bed nor detain him from his vocation, the disadvantage being the time necessary to complete a cure.

Treatment by divulsion or breaking the stricture is an operation less popular to-day than previously. It consists in passing a divulsor through the strictured area and so using the instrument that rapid and full stretching or even tearing the stricture results. Bigelow's divulsor is used by first passing a filiform bougie into the bladder, with this as a guide, the filiform is attached to the staff of the divulsor which latter follows the course of the former; upon this staff an appropriate divulsor is guided down the urethra and through the strict-



ure with steady pressure. Several sizes of the divulsor are made and the operation is complete when the full size is used.

Stearn's and Gouley's divulsors (Fig. 61) are used either with or without the filiform guide; they are quite small when closed and unless the opening through the stricture be very small or irregular, the guide is unnecessary. The same precaution against making false passage should be taken, and unless the surgeon be very familiar with this subject, it would perhaps be safer to work with a guide. With such an instrument through the stricture, the guide may be withdrawn and the blades of the instrument slowly opened. When the desired degree of divulsion is reached, do not make the mistake so common to amateurs in letting down the instrument (even a little before removing), for if this should be done the lining membrane of the urethra falls between the blades; it is tightly grasped, and the instrument cannot be removed without stripping of this tissue which would be the starting point of traumatic stricture.

It is very seldom that I use these instruments for the treatment of stricture. This operation is indefinite in the anterior urethra; I use divulsors with much satisfaction when the stricture is too narrow to admit a proper cutting instrument; the opening can be readily widened with them.

#### Electrolysis.

Being forced to notice the wonderful claims made for electrolysis (or curing stricture by electricity), and having a number of cases that insisted upon this new treatment; contrary to my best judgment, I provided myself with a most approved electric outfit and became ready to waive all prejudice. (The term sounds



well; it appeals to the masses.) With ten well selected cases my work began; there appeared to be much benefit in eight; two did not do so well. The treatment was faithfully carried out and the following conclusions reached: The mind improved in ninety per cent for the first few days of treatment; in sixty per cent an improvement of the part resulted, equal to the improvement following the use of a steel sound the size of the electrode, and forty per cent were made worse. I have no confidence, whatever, in this method of treatment. Galvanism, however mild, has no resolving, or absorbing influence upon an organic stricture; but, on the contrary, its action, if applied in appreciable currents, is in essentially the same direction as that of the usual causes of stricture (i. e., inducing cell proliferation).

#### Urethrotomy.

Is the treatment of stricture of the urethra by cutting, the operation done within the canal is called Internal Urethrotomy, and the operation done from without is called External Urethrotomy.

The instruments designed for internal urethrotomy are called urethrotoms, of which there is a great variety. Strictures at or near the meatus can be divided with a probe-pointed bistoury, or with an instrument called a meatome. A strictured or narrowed meatus should be cut upon the floor in the line of the median raphe; all other strictures found in the pendulous urethra should be cut upon the roof, precisely in the center. Strictures of the bulbous or deeper urethra should be cut from the outside, consequently upon the floor of the canal.

The operation of internal urethrotomy consists in having all surgical details of preparation carried out.

The patient should be prepared for a few days by having his general health brought up to a fair standard; his urine should be examined in advance, and if unnatural, the best efforts to correct it should be employed.

Those remedies recommended for cystitis may be of service if the condition be urgent; it is often impossible to have an ideal state. The freshly cut surface is to come in contact with the urine; healthy urine is an elegant tonic; decomposed urine is a poison, hence the necessity of having the urine slightly acid and free from hurtful products.

With such a patient upon his back, the area may be anæsthetized with cocaine in this manner. Ten drops of ten per cent solution are drawn into a deep urethral syringe, the point carried to the face of the stricture, a small rubber catheter is tied around the penis one-half inch anterior to the point of the syringe (which will be one-half inch anterior to the stricture); the rubber is applied just tight enough to confine the drug to the desired area, and loose enough to permit circulation in the penis. In ten minutes the part is insensible to pain, otherwise ether or chloroform narcosis is employed.

If the stricture be tight and only a filiform will enter, it may be stretched as described under divulsion; the object is to permit a urethrotome to pass, failing to satisfactorily divulse, the urethrotome may be threaded upon the filiform guide and pushed to the desired depth. The situation of the stricture should be carefully measured and this marked on the urethrotome (with reference to the position of the blade when produced). This is done that the exact knowledge of the knife to the lesion can be had. The closed ureth-



rotome, with knife concealed, is lubricated with carbolyzed glycerine or oil and slowly introduced. The presence of the obstruction is noticed as the point passes, when the knife of the instrument is just beyond the stricture (which is known by the mark previously made, and also the position of its remote end). The instrument is now adjusted with the cutting edge of the knife in the median line upon the roof of the urethra; now the knife is exposed with its edge in relation to the stricture, the urethrotome is slowly opened, gradually forcing the cutting edge deeper and deeper into the strictured tissue until a size has been reached equal to the natural calibre of the canal. If it is believed that the stricture zone is broader than the free cutting edge of the knife, it is proper, as the dilating is advanced, to drag the knife through and divide all such material. When the required cutting is finished, the knife is concealed and the instrument withdrawn (without letting down its blades). A bulbous sound about two sizes smaller than the cut stricture is now lubricated and passed beyond the cut, and all irregularities noted with its withdrawal. A full size steel sound is now passed to the bladder, and the operation is completed by passing a catheter and washing out the bladder. This operation is rarely followed by hemorrhage of any consequence. The free surface of the knife in most instruments is such that a cut beyond the coats of the urethra can hardly be made. Reckless surgery can inflict a cut beyond, or through the parts, and hemorrhage rather profuse will follow. This can readily be controlled by ice, pressure on the outside, or by a sound on the inside, or with both. Occasionally, on account of excessive cutting, the cavernous substance is reached, when hemorrhage and a deformity of the penis



when erect may result. Such a patient should be put to bed for a few days. Diseased urine may be drawn through a catheter, otherwise it should be voided in the natural manner. This operation can be done at home, or most anywhere, the urethra being a shut canal, infection is no more liable one place than another, if the operation be clean throughout. The after treatment is the use of full-sized sounds, beginning on the fourth day following the operation and repeating about once a week thereafter for a month, then at longer intervals until the part has thoroughly healed. A sound should be used a few times a year, for a long time, to make sure that there is no evidence of return of the stricture.

FIG. 62.



Wyeth's modified Otis urethrotome.

FIG. 63.



Gouley's dilating urethrotome.

FIG. 64.



BLEES-MOORE INSTRUMENT CO.

Gross' curved urethrotome.

**External Urethrotomy.**

This is an operation for stricture in the deep urethra, and any obstruction, traumatic or otherwise, found in this region. It is often done to secure rest and drainage of the bladder, for infiltrated urine, small calculi, growths at the neck of the bladder, etc. There are four operations known; with one exception all are easy of performance, relatively simple and safe. There is little difficulty when some form of a guide can be used. When it is impossible to even use a filiform for this purpose, in those long-standing cases where fistulæ exist, where the canal is filled with pathologic material and has lost all resemblance of its real self; it is under such conditions as this that external urethrotomy becomes one of the most difficult operations in the domain of surgery.

The simplest, and the operation in this region that is oftenest done, is when the obstruction will admit of a grooved staff (Fig. 65).

With the patient surgically prepared, squarely upon his back and anæsthetized, the staff is introduced and the patient placed in the lithotomy position (Fig. 66). An assistant steadies the staff, making its convex and grooved portion press out the perineum, and at the same time holds up the scrotum. The median perineal raphe is the site for the incision which should extend from the posterior scrotal angle downward toward the rectum for about two inches; the integument and deeper tissues are carefully divided down to the urethra, the groove in the staff is now detected with the finger and an opening into it of one-half to three-fourths of an inch (depending upon the amount of stricture tissue to be divided) is made, through which a No. 33 or No. 35 soft rubber catheter is passed into the bladder



which now may be washed and inspected for stone or other disease. A full-size sound should be passed through the meatus to the bladder.

FIG. 65.



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Mason's catheter staff.

FIG. 66.



Lithotomy position.

The catheter should be passed through the perineal wound and arranged so its eye is just within the bladder; it is often pushed well up toward the



fundus, in which situation drainage and rest is not had, and the object of the operation, and the benefits anticipated are defeated. This perineal drainage is fixed in this position with a suture, including the integument from either side, the wound is now washed and packed with gauze, the patient put to bed and the drainage attached to rubber tubing, ending in a bottle beside the bed containing a solution of carbolic acid. The urine from the kidneys will now pass into the bladder on through the perineal drain, down the rubber tubing into the disinfected receiver.

Ordinarily the bladder should be washed through this drainage (after disconnecting the rubber tubing) twice a day with boric acid solution or some appropriate antiseptic. The perineal drainage-tube should be removed every three or four days, cleaned and returned. Usually it can be removed permanently on the eighth to twelfth day when full-sized sounds should be used at intervals of once a week. The perineal opening begins to close of its own accord upon the removal of the drainage, and the urine will be passed normally after three to ten days. From a clean operation, a fistula is not to be feared. Any additional treatment may be directed on general lines to meet existing conditions. The patient can leave the bed on the day following the removal of the tube. The wound should be protected with antiseptic dressing, held in place with a T bandage, until repair is complete. When the incision in this operation is made in the median line there is little hemorrhage, no vessels will require a ligature; if the incision is inclined to the side, the artery of the bulb of the urethra may be cut and some difficulty may be had in ligating it. At times this vessel is found in the median line and cannot be avoided.

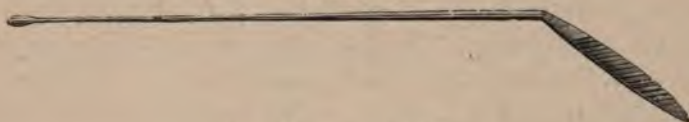
The operation known as Gouley's and Wheelhouse's differ somewhat from the above. In the former we have to do with a stricture so small and so tortuous as will only admit a filiform bougie. With the patient prepared, placed and anæsthetized, as in the above operation, the filiform is passed into the bladder. Over this, as a guide, Gouley's tunnelled catheter staff is passed down to the stricture.

This instrument and the scrotum are managed as before. An incision in the perineum identical with that just described, except carrying it nearer to the anus, making it two and a half inches in length, is made down to the urethra, the groove in the catheter staff is located with the finger-nail, a bistoury is passed through the urethra into the groove and a cut toward the rectum an inch in length is made. It is to be remembered that in this groove is the filiform guide; care should be taken lest it be cut. The surgeon should have all anatomical bearings clearly before him, the bistoury should puncture the urethra only in a single place and the cut made free and clear. A ligature is now to be passed through both edges of the open urethra, made long enough to serve as retractors (but little tension should be applied lest they cut through and wound the part). Now the catheter staff is pulled slightly forward, the handle manipulated in conjunction with the retractors, the black filiform will be seen. An Arnott's director (Fig. 67) is entered alongside the filiform and passed into the bladder; being sure of this, the filiform may be removed. In the groove of the director Gouley's bistoury (Fig. 68) is entered and passed through the strictured zone, cutting freely and clearly as it goes, the director with the bistoury is turned to the opposite direction and as the



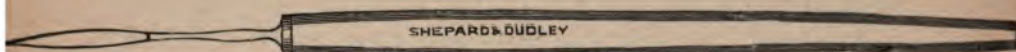
knife is withdrawn this part of the stricture is cut. The probe pointed gorget of Teale (Fig. 69) may be substituted for the small director when the opening through the stricture will permit its passage. The

FIG. 67.



Arnott's grooved director.

FIG. 68.



Gouley's beaked bistoury.

FIG. 69.



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Teale's probe-pointed gorget.

finger may now be gently pushed into the bladder, after which the viscus should be washed, explored and cared for as directed in the previous operation.

The Wheelhouse operation is identical with the last, with these modifications. It is done in those cases



where it has been found impossible to even pass a filiform (such cases are very rare); if the urine, even in the smallest quantity, can find its way through; diligence and perseverance will succeed in insinuating a filiform. The class of cases where it is impossible to do this is where fistulous openings exist, and the urethra completely blocked. Before abandoning hope of success with the filiform, the various shapes of this instrument should be tried. The canal down to the stricture may be filled with olive oil and manipulated, a dozen or more filiforms may be placed and jostled about the surface of the stricture hoping one may enter; in short, the last and most earnest effort on the part of the surgeon should be the passage of

FIG. 70.



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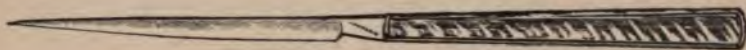
Wheelhouse's urethrotomy staff.

the filiform. When no guide is possible, the patient is prepared as before. Ether narcosis is engaged, a Wheelhouse staff (Fig. 70) is passed down to the stricture with the groove upon the floor of the urethra, the patient is put in the lithotomy position. This staff and the scrotum is taken charge of by an assistant, a favorable light and plenty of time provided. The surgeon seated upon a low stool with the light directly upon the field of operation, an incision is carefully made as before directed, possibly extending to within one-half inch of the anus, the urethra is reached and opened in the groove which will be anterior to the stricture. This opening should be large enough to receive the hooked extremity of the staff as it is turned

over. Now the angle of the urethra will be engaged with this hook, and the incision in the urethra should be carried back to the face of the obstruction. The sides of the cut urethra are retracted, either with forceps or by sutures, and the surgeon looks directly upon the obstructed area hoping to find the opening.

There may be much that is pathologic, and the picture before him may not appear to offer any aperture whatever; of all times it is now that coolness and method be practiced; the small probe-pointed director of Arnott may be used to explore, or any suitable instrument; Walker's knife (Fig. 71) is serviceable. It may be that no difficulty will attach to this search, or

FIG. 71.



BLEES-MOORE INSTRUMENT CO.

Walker's knife.

it may be that two hours or even a second sitting may be necessary in locating the opening.

Personally, I have often been placed in such a position, but fortunately I have thus far succeeded without undue delay. Knowledge of anatomy is essential, and too great haste may often cause confusion and delay. When the opening is found the operation is finished in all respects as the previous. The after treatment should be modified to meet individual requirements. Cases that demand this operation are very chronic, and many times fistulæ exist which should be opened, curetted and packed.

The Cox operation is one of so limited application that it will be passed.



## CHAPTER X.

### STONE IN THE BLADDER—DEFINITION—CAUSES—SYMPTOMS— DIAGNOSIS—TREATMENT.

Stone in the urinary bladder (as indicated by its name), is a concretion made up for the most part of the normal constituents of the urine which may be the oxalates, urates, phosphates, etc., collected about some foreign substance found in the bladder and offering itself as a nucleus. Thus a clot of blood, a piece of catheter, a shot, fragment of bone, a hairpin, a small stone, from the kidney, or any object whatever that is rolled about in the bladder may begin collecting the urinary salts, mucus, pus, etc., irritating the organ more and more as it increases, and making the condition favorable to its rapid formation.

Occasionally a small concretion leaves the bladder and enters the urethra and becomes lodged. It may ulcerate its way out or it may continue its development, to be removed later.

Certain sections of the country favor the formation of stone. My native State, Kentucky, furnishes a large number, so with Tennessee, Virginia, etc., no doubt on account of the water and diet. Any diet that brings the urine to an alkaline condition, any disease or obstruction to the free evacuation of the bladder, acts in the direction favorable to stone formation. Bladder stones may be of such small size as to cause but little trouble or may completely occupy the viscus. They may form rapidly or their growth may be very slow indeed. I will briefly refer to two cases, illustra-



tive of the differences displayed in the same disease, and will further show how easy it is to err except diligence and method attend such examinations.

October 11th, 1889, J. H. consulted me about his little son, Mike H., aged eleven years. The history he gave was everything or anything. To produce it here would require many pages. In substance, he said that three years previous the little boy began to complain when he passed water, that he was taken to his family physician, whom I know to be a pleasant homeopath, that during these three years this little fellow had grown worse from week to week, that an abscess had formed in his perineum, broken and the urine had adopted this fistulous tract; on account of the pain he had pulled at the penis so long and hard that the doctor had concluded his trouble was due to a long prepuce and recommended circumcision which was done. This operation was only an additional complication. The little sufferer continued to pull at it, infection, followed by suppuration, to an extent that his entire genitals looked necrotic. To make life endurable morphine had been given for at least two years. At this time his daily dosage was eight powders of one grain each. Even in his extreme condition, emaciated, septic, his body full of pain and with prayers for death, it was difficult to overcome the prejudice in the mother's mind against the old-school doctor. My presence was unwelcome, notwithstanding a diagnosis was made of stone in the bladder under great difficulties (the urethra being closed, the fistulous openings were taken advantage of, and with a slender probe the stone was reached.) An effort was now made to improve the condition of the patient, his pain being so great and infection so extensive, it was found impossi-

ble to succeed. October 22, 1889, the patient was etherized and hurriedly prepared. The stone was of such size that it was impossible to deliver it through a perineal opening, a supra-pubic incision was made, as will be described later, and a stone, weighing upward of two and one-half ounces extracted. I was never able to give the patient any after attention. In a few days improvement began, and I was informed that the little fellow wished his former attendant to care for him, to which I was forced to consent. A month later the bladder and perineum had healed and the boy was rapidly gaining weight and strength. I was told by his father that no opiate had been used since the operation. Eleven months later I was consulted by the father, who told me that Mike was complaining again. I had him brought to my office, chloroformed and examined and stone diagnosed. I proposed a second operation while the condition was favorable, but literature from mineral springs was so convincing, that my services were declined and lithia water was used. During the next month the symptoms developed so rapidly that the case was placed in my charge (with many apologies for lack of appreciation, etc.) The previous operation having been so successful it was decided that October 22nd (which was the first anniversary) should be the time for the second operation. On this date, 1890, the bladder was opened above the pubis, a stone, weighing one ounce and one-half dram, was removed, and the usual after-care given with a perfect result, the patient to-day being a perfect specimen of physical strength.

The second case is that of Mr. C. H. V., age sixty-eight years, who had complained of bladder disease since the age of twenty-seven, had passed blood, pus,



etc., at intervals, and displayed all the symptoms of stone for a number of years. For relief of retention urine, I was called by his regular attendant, at which time his history was learned and the presence of stone detected. Left perineal lithotomy was performed with good results, when a stone, weighing two and one-half drams, was removed, the center of which was a shot that was received nineteen years before through the accidental discharge of a gun.

From these two cases will be learned that the time necessary for the formation of stone is very variable and the symptoms may, in like manner, vary in character and degree.

#### Symptoms of Stone in the Bladder.

With an understanding of the nature and function of the bladder, the causes and conditions leading to stone formation, the change in size and situation as the organ is filled or emptied, leads to a very clear understanding of the attendant symptoms. Pain is perhaps the most constant and pronounced of all. This pain will be slight when the stone is small, its exterior smooth and the integrity of the bladder good, and more severe when the conditions are reversed. This pain will be greatest when the body is jolted, as in riding and running, as opposed to rest. It will be paroxysmal at times. It will be developed as the urine is voided and the vesical sphincter grasps it.

The disturbance of urination will be measured by the above, thus if the stone be angular and irregular, when grasped as the bladder is emptied the parts will be wounded, and blood will be passed with the *last urine*, pain will be greater and cystitis will develop more readily. If of a shape to act as a valve to the vesical



neck the stream will be suddenly arrested and a change in position will be necessary to complete the act. Reflected pain to the end of the penis is frequent, some relief is had when the member is squeezed or pulled, this is very constant in the young, and often leads to masturbation, and an elongated condition of the penis.

The urine will be found to show evidence both of the changes leading to stone, and the morbid condition resulting from the presence of the stone. All the symptoms of cystitis will be a part of the scene, hæmaturia, history of renal colic or obstruction, to the urinary passages may be expected.

#### Diagnosis.

From the history, symptoms and clinic picture offered by the patient much presumptive evidence is had and a diagnosis should be undertaken along these lines. Every avenue leading in this direction should be explored and due weight attached to all information found, but it is left to a physical examination to say whether or not stone exists. With this exploration and

FIG. 72.



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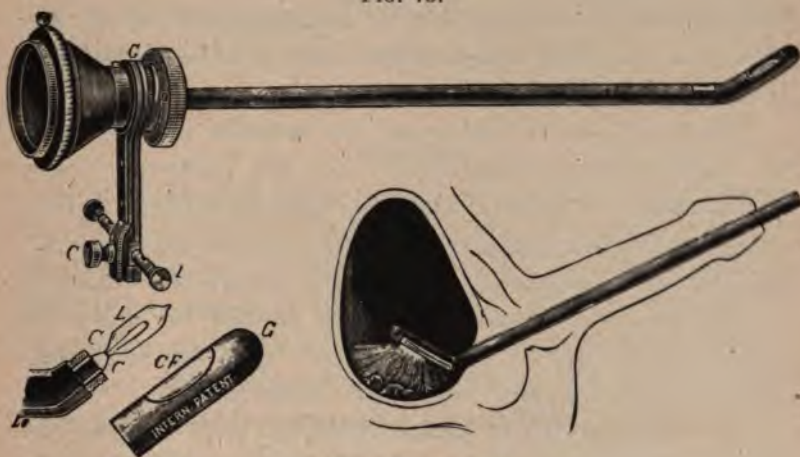
Thompson's stone searcher.

examination of the bladder, even though all else in this connection be omitted, a correct conclusion is readily had. With proper preparation, a patient suspected of having stone should be placed upon his back, hips slightly raised and with four to eight ounces of fluid in the bladder, my preference is warm, normal salt solution. A Thompson stone searcher (Fig. 72), or some short, curved instrument, is introduced to the fundus

of the bladder where it is gently rotated, making the instrument touch every part; it is now withdrawn slightly and a similar movement is made, this order is continued until the entire organ has been searched.

Where the prostate has elevated the bladder neck making a depression ("bas-fond) of the bladder," it is especially important to so manipulate the short, curved instrument that this pouch be explored; it is the lowest part where a foreign body will find its way by gravity, and here it would rest with the greatest comfort.

FIG. 73.



BLEES-MOORE INSTRUMENT CO.

Nitze-Leiter cystoscope.

If a stone is met by the instrument, it will be recognized either by the click or the grating sensation transmitted to the hand through the polished instrument. Some dwell upon the difficulty of finding a stone; from personal experience, I am inclined to believe this a very easy matter. Such an examination will also admit an approximation of the size of a stone and an estimate of its hardness, both of which are important when deciding upon treatment.



The cystoscope (Fig. 73), is a most useful instrument here; it may be used, a stone located and its size and composition determined.

So important an instrument demands more than a passing mention, while a detailed account of its many advantages cannot be produced in a work of this kind, yet enough may be offered to convey a fair idea of its usefulness.

This instrument consists of a series of lenses, a window either upon its concave or convex extremity, and a small incandescent electric lamp, as shown in the cut. It is a most ingenious optical arrangement, about the size of a No. 25 French sound, and is to be introduced into the bladder, as a sound.

There are several patterns, the window may be upon the anterior part of the shaft or in the posterior, there is a pattern provided with an irrigating catheter, and a catheter to be introduced into the ureters, and one arranged for the removal of growths within the bladder. To use the instrument the patient should be upon his back, thighs apart, legs elevated, with his buttocks slightly over-hanging the edge of the table.

The urethra should be anæsthetized with cocaine, the bladder thoroughly cleansed and containing four to six ounces of normal salt solution, the cystoscope is introduced carefully, passing the angle well within the viscus, the light which is furnished from a storage, or fluid battery (having been previously tested) is turned on, the surgeon seated upon a low stool between the patient's thighs, begins the work of examining, this is done by changing the position of the instrument as the search progresses, until the inspection is complete. Many recommend injecting quite a quantity of cocaine solution into the bladder. I have found that it does no



good; applied to the urethra it serves the purpose of conducting such an examination with reasonable discomfort.

The lamp in most instruments gets quite hot and care should be taken that it is not held in contact with the bladder or the urethra, it should be extinguished before the instrument is removed. Much practice with this instrument is necessary, at least two patterns are required for a complete examination.

The X-ray may be serviceable. I have used it in two cases only, and in neither would I be willing to rest a diagnosis upon its evidence; the difficulty is in the shadow of the pelvic and spinal bones eclipsing the stone.

#### **Treatment.**

The treatment to be advised in a given case should be that which promises the surest and safest results with the least probability of return. I am convinced that it is a waste of time to aim to dissolve a stone by mineral waters, by medicine taken or injected into the bladder, although much good, no doubt, could be accomplished in this direction had we the power to foresee the future of our patients. Unfortunately we never know the patient has a stone until it is there, and are therefore unable to prescribe prophylaxis. We should cure a stricture and so deal with the results of it that a favorable state for stone formation be not left, the same is true of prostatic disease, and all other diseases obstructing the parts. All gouty or rheumatic subjects should have their diet, exercise, etc., so regulated that concentration of the urine would not arise. The liver, skin and digestive organs should be considered, but all this is not applicable to a stone in the bladder.

A short while ago much emphasis was placed upon certain articles of food, meats and sugar; it has been the trend of modern thought at least, to attach less weight to such minor matters, and at this moment I am inclined to think that in health as well as in disease, the uncorrupted appetite or craving is the best guide to follow in the selection of our food. If we live upon the animal and vegetable products maturing and ripening about us, those things of which we are fond and prepared in a manner acceptable to the palate and agreeable to the stomach, we need look no further in this direction.

In the matter then of disposing of stone in the bladder, medicine, diet, and change of climate, have no place, and the choice is between palliation or operation.

If the patient be of extreme age, and the suffering resulting from a bladder stone be slight, it is perhaps the better part of wisdom to care for such a case by looking after his comfort and general health and so long as such measures succeed no operation will be indicated. Should the possessor of stone be suffering from other disease, not directly due to such a foreign body, namely, organic kidney or heart disease, it may be well to content such patients with palliation.

In all situations when the comfort of the patient is sacrificed or when the health is declining in consequence of a stone, an operation is not only indicated but demanded.

The preparation of a patient for this operation differs somewhat from the usual surgical case. The bladder and the urethra are almost invariably diseased and the treatment for cystitis should be employed to prepare it for surgical manipulation.



FIG. 74.

Bigelow's  
lithotrite.

There is offered a choice of several methods for removal of the stone. The bladder may be entered through the perineum or above the pubis, or the stone may be crushed while in the bladder and washed away in small fragments.

#### Litholapaxy (or the Crushing Operation).

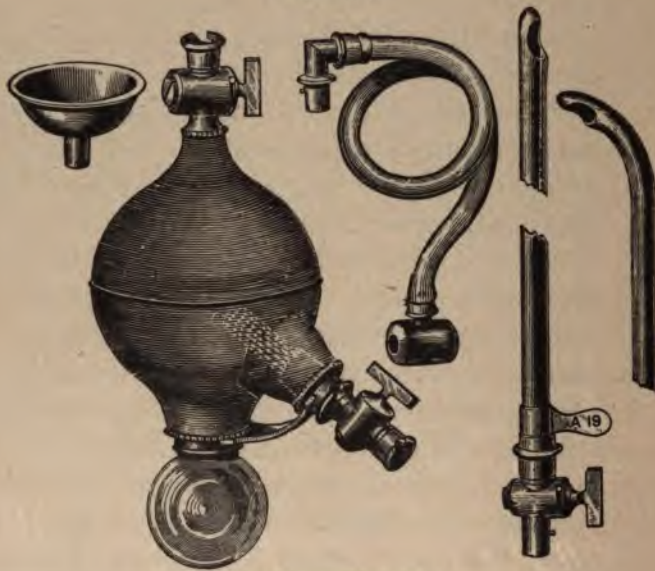
This operation is the favorite with many and for several reasons presents strong claims for general favor. It cannot be done upon male children on account of the small size of the urethra. It cannot be done where there is stricture; the same is true with most forms of prostatic hypertrophy or other urethral obstruction. Large or hard stone cannot be safely treated, nor do I believe it should be done when there is extensive disease of the bladder; in fact, the usual conditions causing stone and the diseased areas due to it, together with the uncertainty of the results, develop the conclusion that litholapaxy will soon be classed with its predecessor, lithotrity, which latter has long since passed into oblivion. This operation is one of the remaining surgical operations that is done from first to last in the dark, the result of which you can never be sure. In the light of modern thought and understanding there can be but one future for all such methods. The instruments necessary for the performance of this operation are a lithotrite (Fig. 74) with which to seize and crush the stone, a wash bottle, or evac-



uator (Fig. 75) and a series of tubes to flush the bladder and wash away the debris, the result of the lithotrite.

The patient is prepared, etherized, placed upon his back, with hips slightly raised, about four ounces of boric acid solution is thrown into the bladder; the lithotrite is introduced, the stone touched (which will

FIG. 75.



BLEES-MOORE INSTRUMENT CO.

Bigelow's evacuator and tubes.

be upon the floor), the instrument is turned one-half around (jaws up) and the jaws opened by means of the attachment at the handle; it is now (with open jaws) turned back and the stone grasped and crushed, (to always do this and spare the bladder walls requires skill that few possess). The larger fragments are in turn treated in this manner until the stone has been so treated that all its parts will pass through the tube.

The lithotrite is now removed and a tube (full size) either straight or curved, is entered, the wash bottle attached, and the broken stone removed. Should any fragments remain, after washing, the lithotrite is to be used as before and the bladder again washed. Should the tube become plugged an obturator should be used. Care should be taken that the tube when withdrawn holds no portion of the stone in its eye to injure the urethra. The ineffectual work done upon the cadaver, the feeling of uncertainty following this method upon real cases, the anxiety and fear of bladder injury forces the profoundest respect for those who have the skill to always so manage such cases and do no injury.

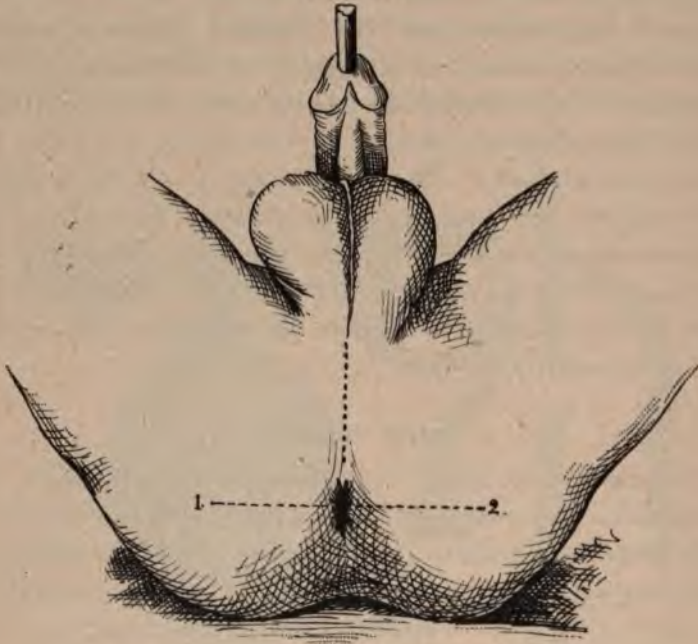
#### Lateral Lithotomy

Is the operation for stone in the bladder through an incision in the perineum. This is clearly mentioned in our most ancient literature. It has always been considered a serious undertaking, and even to-day the mortality is relatively high. The fact that the mortality in this operation is slightly greater than in the operation of litholapaxy seems to be an argument that is incontrovertible. Evidently, sight is lost of the fact that litholapaxy is only done where there is no stricture or obstruction, consequently little disease of the bladder, urethra and kidneys; it is only done where the stone is small and soft; it is not done on children; and it is in all these extreme conditions where lithotomy has a place; upon the badly diseased, and dying as it were. Is it any wonder that there should be a slight difference in the mortality? I have not yet seen a case of stone where the urethra and bladder were in good condition; the organs are almost invariably septic and in



form to be improved by free drainage. All things considered, the indications for lithotomy are far more numerous than for litholapaxy.

FIG. 76.



Lithotomy position.

FIG. 77.



BLEES-MOORE INSTRUMENT CO.  
Little's lithotomy staff.

The perineal incision is indicated when the stone is small, when there is stricture and obstruction, and when drainage is desired.



The patient is prepared, placed in the lithotomy position (Fig. 76), with good light directly upon the field of operation. The lithotomy staff (Fig. 77) is introduced into the bladder, with its point against the stone and there held by an assistant, with the instruments in charge of a second assistant and, at easy reach, the surgeon seated upon a low stool facing his work. The assistant upon the left of the patient in charge of the staff, now draws up and slightly outward, hooking the point of the staff under the symphysis and having the convex grooved portion prominent in the perineum (the scrotum being held up).

A survey of the premises is now calmly taken, the finger is inserted in the rectum to make sure of the relations, the tuber ischii are observed. Now it is that perineal anatomy must be known.

Clearly refreshed by the hurried consideration of the landmarks, the operator once more glances at his assistants, sees that the staff is correctly and firmly held, with one stroke of the scalpel, beginning one and one-fourth inches anterior to the anus and one-third of an inch to the left of the median raphe, outward and downward for two and one-half to three inches, ending midway between the tuberosity of the ischium and rectum. With this first cut the parts are divided to a level with the urethra (many surgeons prefer to open the urethra with this first incision. I have tried both an equal number of times, and am convinced that the proper opening is best made as above suggested). The bulb of the urethra is now pushed aside, the scalpel passed through the urethra into the groove of the staff (making but one opening). The knife (Fig. 78, with its back occupying the groove of the staff) is pushed along the groove in a horizontal position until its point enters the

neck of the bladder. Now the knife (with its point held in relation to the staff) is made to describe an angle of thirty to forty-five degrees by lowering its handle. The cutting edge is directed in the line of the first incision and in this position it is withdrawn, cutting all the while, to a degree that will admit of the removal of the stone. The finger is now insinuated

FIG. 78.



Blizzard's lithotomy knife.

FIG. 79.



Lithotomy forceps (straight).

FIG. 80.



BLEES-MOORE INSTRUMENT CO.

Lithotomy forceps (curved).

into the bladder along the staff, which latter is now withdrawn. The stone is seized with forceps (Figs. 79 and 80) and extracted without bruising the parts. Its delivery should be with the utmost gentleness, always with its smallest diameter. Should this incision fail to accommodate, a similar but shorter cut can be made upon the other side.



### The Median Operation

is essentially the same as the above, except (as its name implies), is in the median line. Stones less than an inch in their largest diameter may be removed by the median cut. Stones from one to two inches in their largest diameter through the lateral, but larger stones should be removed through the supra-pubic wound.

### Supra-Pubic Cystotomy.

This operation is indicated for large, or encysted stones, bladder tumors, etc.; it affords a perfect inspection of the organ and when done under favorable circumstances is relatively safe. The patient prepared and etherized, the bladder comfortably filled with boric acid solution, the patient is placed in the Trendelenburg position (which means upon the back, the hips raised on an inclined plane fifteen to eighteen inches above the shoulders, the legs together). An incision three inches long is made in the linea alba, beginning three-fourths of an inch from the symphysis pubis and extending toward the umbilicus; this is carried to the recti muscles, which are now separated with the handle of the scalpel, and held apart by small blunt retractors. The tissues are now separated down to the pre-vesical fat, which should be pushed toward the peritoneal fold, the distended bladder is now in view; it is transfixed (I prefer passing a large curved needle armed with a substantial double suture); a sharp and narrow bistoury is entered, with and in advance of the index finger, and the fluid of the organ is in this way retained. The incision into the organ should now be made of such size as will meet the requirements of the operation, the stone is grasped and



removed. If the bladder is found to be in a healthy condition, I close its wound with cat gut and the abdominal with silk, leaving a small gauze drainage in the lower angle of the latter. Should the bladder (as it usually is) be found inflamed, it is best to insert a rubber drainage at its lower angle, close its remaining portion and leave the outer wound open, the whole packed with gauze. Some surgeons make no effort to close either; I have often acted in this way, but now, much prefer partial or complete closure. The after treatment of all operations of the bladder should consist in keeping the parts clean and at rest.

## CHAPTER XI.

DISTURBANCES OF URINATION — PHYSIOLOGY OF URINATION —  
URGENT URINATION — DIFFICULT URINATION — INVOLUN-  
TARY URINATION — RETENTION OF URINE — HÆMA-  
TURIA — PNEUMATURIA — NORMAL CONSTIT-  
UENTS OF URINE — URINARY  
EXAMINATION.

### Physiologic Urination.

By virtue of the pressure within the Malpighian corpuscles (Fig. 81), the urine is extracted from the blood, aided no doubt by muscular action of the uriniferous tubules; the urine finds its way into the pelvis of the kidney, thence by the action of gravity, together with uretral muscular movement, it passes into the bladder. The normal kidneys of the healthy adult

FIG. 81.



Malpighian corpuscles.

should produce about forty to sixty ounces of urine in each twenty-four hours. The healthy bladder, after receiving fourteen to sixteen ounces, is distended; now by its nerve endowment there is created a desire to dispose of its contents. This first impression is forwarded from the neck of the bladder to the cerebral center, which in turn communicates with, and

orders its subordinates to prepare; through this command the diaphragm and abdominal muscles join in action with the sphincter muscles and the stream is started. Thus far the act is governed indirectly by the head center; now the involuntary center (or the bladder center) is placed in charge and the act completed as such. When the remaining quantity is so small that the bladder fails to complete the task, the voluntary center again calls into action the diaphragm and abdominal muscles, which now spasmodically and in jets force out what remains.

There is yet a small quantity in the urethra which is pressed upon by the urethral and perineal muscles, and ejected. Still anterior and beyond the reach of the action of these latter muscles there is in the canal a few drops which are forced out by a wave of blood upon the outside, coursing downward and pressing the sides of the urethra together, thus disposing of the last few drops. The number of times this act is performed in health varies somewhat, owing to diet, season, exercise and condition of the blood; ordinarily, an individual should void his urine four to six times in twenty-four hours.

#### **Urgent Urination.**

There are many who suffer embarrassment and pain on account of a sudden and pressing desire to pass urine; knowing their inability to curb the desire or stay the act, this condition is one deserving of mention; true it is that such a state is but an indication of disease, near or remote, and treatment of the underlying cause is recommended. Yet such a cause is so obscured that it is impossible to detect it at times and rational treatment cannot be had. As just indicated,



it is the opinion of the author that the nerves at the vesical neck stand as sentinels, always mindful of the bladder's welfare and ready to announce its pleasure to the superior center and await further orders; that disturbances of this kind always depend upon impressions here, or in parts directly associated. Proof of this belief is always at hand; pass an instrument here and there is always awakened such a desire; the finger in the rectum will accomplish the same, if this part be disturbed; therefore, the physician should look for such conditions as create disturbance in this situation; he should examine for posterior urethral disease; should see that the urine is normal in quality and quantity; he should test the capacity of the bladder; should regulate diet, exercise and clothing; look well to the condition of the nervous system. Tumors or foreign bodies pressing upon the parts should be considered and treatment should be appropriate to such findings.

## No. 58.

R.—Fl. ex. rhus. aromat..... $\mathfrak{z}$ i  
 Fl. ex. belladon..... $\mathfrak{z}$ i  
 Potass. nitras..... $\mathfrak{z}$ iss  
 Fl. ex. cascara aromat..... $\mathfrak{z}$ i  
 Tr. Cubebæ..... $\mathfrak{z}$ ii  
 M.  
 S. A teaspoonful in water  
 every three or four hours.

## No. 59.

R.—Fl. ex. tritici. ripens..... $\mathfrak{z}$ i  
 Fl. ex. valerianæ..... $\mathfrak{z}$ i  
 Spts. menth. pip..... $\mathfrak{z}$ ii  
 Spts. ammon. ar..... $\mathfrak{z}$ ii  
 Syr. aurant. cort..... $\mathfrak{z}$ iss  
 M.  
 S. A teaspoonful in water  
 every three or four hours.

## Difficult Urination.

Very often complaint will be made that the urine is voided with great difficulty, that much straining is necessary to start the stream, that once begun little trouble is had. The thought previously developed holds good here; in these situations the involuntary part of the act is wanting; the act requires the extreme effort of the diaphragm and abdominal muscles;

the sentinel at the vesical neck is either off duty, asleep or dead; the impulse is received and transmitted in an indifferent manner, the very opposite of the situation in urgent urination. Such cases may be relieved by arousing the proper centers by sight or sound of running water, anything that will bring into the circuit the proper center, an instrument into the urethra, finger in the rectum with pressure upon the vesical neck. Such a condition suggests sluggish nerve response and an investigation properly made in this direction will usually locate the fault. Anxiety, fear and modesty often, momentarily, cause such a disturbance.

## No. 60.

R.—Zinci phosphidum.....gr. iii  
 Strych. sul.....gr. i  
 Quininæ sul.....gr. xxxvi  
 M. ft. pil. No. XXXVI.  
 S. One three times daily.

## No. 61.

R.—Ext. ergotæ pulv.....gr. xxx  
 Aloin.....gr. v  
 Ex. hyoseyam.....gr. vi  
 M. ft. pil. No. XXX.  
 S. One four times a day.

Electricity, hot and cold baths, friction, diuretic and tonic remedies will be indicated.

### Involuntary Urination.

The passage of urine without the consent of the individual is a condition common to infantile and childhood life. It is also found in the nocturnal type in adult life occasionally. Infants are prepared for such accidents and no attention is paid to them.

If the trouble continues into childhood there may be no disease, no chorea, no diathesis, the child being vigorous and healthy, the fault may be the force of habit acquired through inattention on the part of the parent. The diet of the infant is fluid, the bladder small, restraint has not been taught and such incontinence is natural. When incontinence continues, the habit of attending to the blad-



der should receive attention, the individual should be given little fluid in the evening, the skin should be frictioned, the bowels opened, the diet digestible, he should be awakened at stated intervals which should be lengthened twenty minutes each night, all harsh measures should be discontinued and the moments of sleep should be sound, he should be kept warm and comfortable. The nerves should be toned and quieted.

## No. 62.

R.—Tr. cantharides.....℥x  
 Liq. potass. arsen.....℥xxxii  
 Kali. brom.....℥iv  
 Elix. simplex .....℥iv  
 M. ft. sol.  
 S. Ten to fifty drops, according to age, every four to six hours in water.

## No. 63.

R.—Fl. ex. belladon .....℥i  
 Fl. ex. sennae.....℥ii  
 Syr. prun. virgin.....℥iiss  
 M.  
 S. Ten to twenty drops every two to four hours until effect of the belladonna is noticed.

Collodion over the meatus, blisters to the perineum and all the forms of punishment recommended does harm and stands as a menace to good returns. Very often I have seen the condition made worse by such measures and cured by the adoption of the opposite.

Incontinence, in adults, may mean a contracted bladder, a diseased nervous system with paralysis; it may mean overflow, due to urethral obstruction; it may come as a result of retiring after excessive indulgence in beer. In any case attention is called to such conditions, and treatment will be dependent upon the causes.

**Retention of Urine.**

In this condition the bladder becomes filled and there is inability to empty it; there may or may not be desire to void it.

The condition is readily recognized; the patient or nurse



will give a history that cannot be mistaken. The bladder will be prominent in the hypogastrium, fluctuation will be detected.

Retention, like the disturbances previously described, will be due to other causes and is not strictly a disease. The causes that are responsible may be stricture of the urethra, injuries of the same, prostatic hypertrophy, abscesses in the region, spasm of the muscles, due to inflammation, disturbance or reflex irritation, rectal diseases, etc.

Paralysis of the nerves of the bladder proper, due to brain, spinal or long standing disease of the organ, or to one of the fevers. Fright, shame and anger may be responsible. Attention, devoted in these directions, will locate the cause, which should be diligently treated.

Treatment, in addition, should consist in relieving the accumulation at once. If the urethra be obstructed and a catheter cannot be made to enter the bladder, a trocar may be used above the symphysis.

The dangers of such a situation are great, as have already been mentioned, under stricture and prostate disease.

#### **Suppression of Urine.**

Is that condition in which there is no urine deposited in the bladder, on account of the failure of the kidneys to separate it from the blood. It is to be differentiated from retention, as indicated under that heading.

The healthy kidney rarely fails to completely quit its work. Suppression, then, is almost invariably the result of previous disease in the kidneys. The broad term—shock—is cited as a cause; nervous influences, either central or otherwise, may cause it. Certain exhaustive diseases have been known to produce suppression, exposure to

cold and dampness is mentioned as a cause, urethral and bladder instrumentation and operation, are frequently the cause.

The symptoms are pronounced: an anxious expression, depression, a quick, wiry pulse, fever, dry skin, headache, nausea and vomiting at times; and a catheter in the bladder reveals no urine.

Very soon the scene changes, uremic intoxication advances, the breath and skin impart a urine odor to the atmosphere, restlessness, followed by stupor, coma or death (with or without convulsions). The treatment should be energetic and prompt, for there will often be but little time in which to do. Stimulants, hot milk and brandy, strychnine, digitalis in small doses, repeated often, hot applications and friction over the kidneys, hot vapor baths, muriate of pilocarpine (with caution) is often of the greatest service. Diuretic, hyoscyamus, etc., and a guarded prognosis.

The table of Fenwick will be of much service.

## I. ABNORMAL URINATION.

Abnormal urination.	Alterations in the volume of the stream (size of efflux).	Sense of obstruction developing sud- denly.	Gonorrhoea. Acute prostatitis. Impaction of stone in urethra. Congested senile prostate. Onanitic prostate. Chronic prostatitis. Stricture.
		Sense of obstruction developing gradu- ally.	Chronic lesions of spinal cord. Stone in the bladder. Orificial valves of mucous mem- brane.
	Alterations in the continuity of the stream (interrup- tion of efflux).	Efflux arrested sud- denly.	Stone in urethra. Senile enlargement of prostate. Pelvic tumors.
		Efflux arrested in- termittently.	Stone, clot, pedunculated growth, foreign body. Spasm.
	Alterations in the direction of the stream (the para- boia).	Stream bifid.	Atony, muscular or nervous. Muscular enfeeblement of fever or old age.
		Stream vertical.	Stricture. Enlarged prostate.

## II. IMPOSSIBLE URINATION.

Impossible urination (no urine passed).	Suppression of urine.	Non-obstructive.	Renal disease. Shock. Septicity. Hysteria. Reflex causes. Injury to one kidney.
		Obstructive. Peritonitis. Fever. Pressure on bladder neck.	Ureteral obstruction. Rectal collections. Pelvic growths; hydatids. Soft malignant prostatic growths. Acute prostatitis. Congested stricture. Impacted stone in children. Ruptured urethra.
	Retention of urine.	Urethral obstruction.	Anal and hernial operations, etc.
		Reflex spasmodic action. Nerve lesions.	Acute myelitis. Tabes.

## III. UNCONTROLLABLE URINATION.

Uncontrollable urination.	Irrepressible urination.	Inflammatory. Cystospastic reflex. Chorea (?)	
		Childhood.	True incontinence. { Sphincter paresis. After perineal lithotomy. Nocturnal. Dirty habits.
			False incontinence. { Reflex conditions. { Worms; polypus of rectum; over- acid or alkaline urine. Phimosis.
	Involuntary urination.	Adult life up to fifty.	True incontinence. { Operative injury of sphincter. Advanced tuberculosis of bladder with sphincteric impairment. Other forms of sphincteric impairment. Injury or disease of spinal cord and brain abolishing sphincter power. Nocturnal.
			False incontinence. { Ataxia with detrusor paresis. Tight stricture. Intoxication.
		Old age.	True incontinence. { Unsymmetrical enlargement of prostate. Nocturnal.
			False incontinence. { Overflow of an atonic bladder from prostatic obstruction.

## Hæmaturia.

Bloody urine, or blood in the urine, is called hæmaturia, as opposed to hæmoglobinuria, which is a solution of hæmoglobin in the urine. Whether this blood be from the posterior urethra, the remote portion of the kidney, or from intervening portions of the urinary tract, it is called hæmaturia. All these parts are subject to disease, injury and disturbance; all have blood supply, hence the necessity of this understanding preparatory to investigation, seeking the source of such hæmorrhage.



If blood comes from the anterior urethra it will show independent of urination. It is, therefore, not considered if, from the deep urethra it will come with the first urine voided, the last being less colored or clear; if from the neck of the bladder there may be some in the first glass, practically none in the second and most in the third. If a soft catheter be introduced into the bladder and the urine that passes through it is bloody you are assured that its source is beyond the urethra. If now the bladder be gently washed and the second wash shows blood, you are to conclude that its source is from the bladder; if the second wash be clear, the bladder may be manipulated from the pubes, and should this be clear, you are to infer the lesion to be beyond the bladder.

Palpation of bladder and kidneys is of great service. The cystoscope will enable you to plainly see the inside of the bladder, through it you can see the turbid or bloody urine as it enters this organ.

Hæmaturia, then, is not a disease; no more so than the blood that drips from an open wound, but rather a symptom.

Any disease or injury of the urethra, seminal vesicles, bladder, ureters and kidneys, also the diseases already treated of (stone, tumors, etc.), are capable of expressing themselves with blood in the urine, and be the underlying cause.

Congestion of the kidneys, embolism, hydatids, cancer, tuberculosis, syphilis, malarial or severe fever, acute nephritis, filaria, vicarious menstruation, may be responsible; certain drugs may cause it, cantharides, turpentine and quinine.

The treatment will be that of the disease or injury that is responsible. If due to renal congestion, counter irritations, heat, cold, leeches, etc., tannic and gallic acids are

recommended. The salts of iron (especially the muriated tincture) often do good, rhatany, acetate of lead, opium, ergot and benzoic acid, rest, change of climate, good hygiene.

#### **Pneumaturia.**

This condition is of such rare occurrence, and so obscure that the mere mention only will be made. Air or gas in the bladder is called pneumaturia. Fermentation, due to diabetes or putrefaction, could cause it. A fistulous opening may admit air. The single representative that the writer has observed was due to fistula.

#### **Normal Constituents of the Urine.**

The materials appearing in normal urine come as a result of waste products from the food and drink, together with retrograde tissue changes. A perfect and complete analysis of the urine develops a great variety of substances. To appreciate the abnormal, the product in health should be known. To-day, we look more to the urine as an evidence of disease and an index to approaching trouble than at any previous time. The advance in this direction has done much to develop scientific medicine.

The normal constituents of the urine are: water, phosphoric acid, ammonia, urea, creatinin, potassium, uric acid, organic matter, sodium, hippuric acid, pigment matter, calcium, sulphuric acid, chlorine, magnesium.

The following arrangement will conveniently and concisely supply much information bearing upon inspection of urine, and will suggest the direction in which to make examination:

## I.

The amount of urine secreted in 24 hours by a healthy adult should be 40 to 60 ounces.	The quantity is said to be increased when upward of 60 ounces are secreted daily.	The increase may be temporary, which will indicate	Excess of fluids, liquid diet used, or the use of diuretic remedies. Diabetes insipidus. Nervous diseases, hysteria especially. Hydronephrosis (transient) Diabetes mellitus, with high specific gravity. Bright's disease in its incipency. Amyloid degeneration, with low specific gravity. Cirrhosis of the kidney. Cardiac hypertrophy. Pyelitis.
		Or the increase may be permanent, which will indicate	
	The quantity is said to be diminished when no more than 15 to 20 ounces are secreted daily, indicative of	Acute nephritis. Cyanotic cardiac defect. Acute fevers. Inflammation. Shock or collapse from injuries.	

## II.

The normal color of the urine is amber (not straw or lemon), due to the presence of uro-hæmatin.	A pale color indicates	Diabetes insipidus. Hysteria. Polyuria. Hydronephrosis. Large quantities of fluids taken. Diuretics.	
	A high color indicates	Dark yellow to brown red. Milky or smoky. Orange. Red to brownish black.	Acute febrile diseases. Jaundice, from obstruction. Chyluria. Purulent disease of the urinary organs. The use of santonin, rhubarb or chrysophanic acid. Hemorrhage. Methæmoglobinuria. Carbolic acid poisoning. Cancer of the kidney.

## III.

The reaction of normal urine freshly passed is faintly acid, due to acid phosphate of soda; it turns blue litmus paper red. It becomes alkaline after standing, by the production of ammonia from the urea, and turns red litmus paper blue.	When it is highly acid it indicates	Rheumatism, acute or chronic. Gout. Oxaluria. Increase of acids in the diet. Fasting. The use of mineral or benzoic acid.	
	When it is alkaline it indicates	If the alkali is fixed (due to excess of phosphates). If the alkali is volatile (due to ammonia formation).	Diseases or injuries of the brain or spinal cord. It is examined immediately after a hearty meal. The use of alkaline mineral waters. The use of the salts of sodium, lithium or potassium. Cystitis. Paralysis of the bladder or spinal disease. Residual urine (stricture or urethral obstruction).

## IV.

The specific gravity of normal urine ranges between 1.018 and 1.022; its weight is determined by a urinometer.	If the specific gravity is above 1.022 and the urine of high color it indicates	Concentration of the urine. A diet that produces excess of urinary salts. Acute stage of Bright's disease.	
	If the specific gravity be below 1.012 it will indicate	If the urine be of high color. If the urine be of pale color.	The use of diuretics. Hæmaturia. Excess of fluids. Albuminuria. Hydronephrosis. Diabetes insipidus. Nervous diseases.



## V.

Urine may deposit a sediment that may be either amorphous or crystalline.	Amorphous deposits.	Pearly white, which are dissolved by heat, indicate urate of ammonia. Reddish brown, which are dissolved by heat, indicate urate of soda. White and feathery, made gelatinous by the addition of liquor potassa, indicate pus. Cloudy white, made clear and fluid by the addition of liquor potassa, indicate mucus. Dark red or smoky deposits indicate blood.
	Crystalline deposits.	White or pearl color, soluble in acids, indicate earthy phosphates. White or pearl color, soluble only in hydrochloric acid, indicate oxalate of lime. Pink or reddish-brown color, soluble in acids, indicate uric acid. White or pearl color, soluble in liquor ammonia, indicate cystine.

## VI.

The odor of normal urine is characteristic.	If it has a sweet odor.	Glycosuria or diabetes mellitus may be suspected.
	If it has a violet odor.	The administration or use of turpentine may be suspected.
	If it has an offensive, putrid odor.	Cystitis or decomposition may be suspected.
	Certain vegetables and drugs impart characteristic odors.	Asparagus, onions, cauliflower, copaiba, cubebs, santal oil, etc.

In every-day practice, and in the conduct of examinations for life insurance, public service, etc., the chemic and microscopic examination of the urine is made compulsory. Such work is remunerative, interesting and comparatively easy. For all ordinary purposes a cabinet like Fig. 82 will afford the necessary apparatus. In the absence of this the following will answer:

One urinometer and cup.	Two ounces c. p. nitric acid.
Two small funnels.	Two ounces c. p. sulphuric acid.
Red and blue litmus paper.	Two ounces c. p. liquor potassa.
Filter paper.	Two ounces aqua ammonia.
One dozen test tubes, rack and holder.	Two ounces Fehling's solution.
One spirit lamp.	Two ounces sol. chloride of barium.
Two graduated glasses.	Two ounces tr. guaiacum.
Centrifuge, capable of 2,000 revolutions per minute.	Two ounces sol. nitrate of silver.
One microscope, with one inch and one-fourth inch objective, slides, etc.	Four ounces peroxide of hydrogen.

Urine selected for examination should be taken from a collection of twenty-four hours' product; for the same

individual will pass at different intervals during the day urine that differs in reaction, specific gravity and color. When this is not convenient or practical, the morning urine should be preferred. Should it become necessary to postpone the examination, or the urine be sent a long distance, three or four grains of salicylic acid may be added to each four ounces of the specimen to preserve it. Such an amount should be had for the several tests. Smaller quantities often require greater effort and skill.

Perfectly healthy urine may show a flocculent cloud near the bottom of the specimen, which is usually mucus.

Fig. 82.



Cabinet.

Normal urine may be turbid when voided, due to the presence of phosphates of lime and magnesium, which disappear upon the addition of a few drops of nitric or acetic acid.

Normal urine, when cold, may show a turbidity, due to the precipitation of the urates of potassium, sodium, calcium and magnesium. The application of heat effects a solution.

The normal amount of solids voided with the urine in twenty-four hours is 925 to 1,075 grains; of this 300 to



600 should be urea. Some order or system should be observed in urine examinations, that suggested in the last table will be found convenient.

The tests for urates and the phosphates being given, pus is next examined for, as follows: Permit the specimen to settle, carefully pour off the clear upper portion and reserve the thick; or what is better, put the specimen

Fig. 83.



BLEES-MOORE INSTRUMENT CO.

Queen & Co.'s New Urine Centrifuge.

For the immediate sedimentation and examination of freshly voided urine.

into a centrifuge, Fig. 83, and throw down the deposit. The deposit is put into a test tube, to which add about half its volume of liquor potassæ and shake well; the action of the alkali upon the fat makes a soap, which is thick, viscid and ropy, and will foam or lather with water, and behave as soap. Peroxide of hydrogen will produce its characteristic reaction if pus is present.



**Albumen.**

The significance of albumen in the urine demands no elaboration here, merely the consideration of a practical and trustworthy method of knowing its existence. The tests for this substance that are ordinarily made use of are faulty and unreliable; the old heat and nitric acid test has very often misled the amateur, for the urine may contain vegetable alkaloids, oleoresins and peptones, which will afford reactions almost identical with small quantities of albumen.

Objection to the Heller test is had for like reasons (this is the test now so generally recommended by insurance societies), it has some advantages over the first, however; it is made by placing several drachms of urine in a conical glass which is gently tilted upon its side and pure nitric acid is cautiously poured down the lower side of the tilted glass and the urine floated upon the acid. The glass will now show the two substances in this order, if albumen is present, the line between the acid and the urine will be milky, other substances produce a turbidity that is difficult to distinguish from small traces of albumen.

The test that can be most implicitly depended upon, even though the albumen exists in the minutest quantity, is the ferrocyanide of potassium, conducted in this manner: Drop twenty to thirty drops of acetic acid into a test tube, add to this forty to sixty drops of an aqueous solution of ferrocyanide of potassium (one drachm of the salt to twenty drachms of water), to this mixture add urine to half fill the tube, now close the tube with the thumb, and shake gently until the three are mixed and then place the same in a good light. Within one-half to two minutes there will be a milk-like turbidity; if albumen is present, the smallest traces will show. With this test error is im-

possible, for those substances that produce confusion in the old test do not respond in this, in other words if turbidity comes it is albumen and nothing else.

### Sugar.

The presence of sugar in the urine has been too lightly considered by many, to-day we believe it to be scarcely second in importance to albumen.

The usual tests for sugar lack much of being ideal, the time-honored Fehling's is doubly faulty, first the instability of the solution itself, and second that it is difficult to draw the distinguishing color lines between some shades of yellow and the reddish brown due to sugar. The Whitney test is an excellent one, but the most satisfactory of which I have any knowledge is the Purdy test, through this test, not only is the presence of sugar determined, but the quantity as well, it is simple, inexpensive and reliable. To prepare the solution for this test the following formula and instructions are produced:

#### No. 64.

Rx.—Sulphate of Copper, c. p.....	gr. xlv.
Caustic Potash, c. p.....	gr. cxxiv.
Strong Ammonia, U. S. P. (sp. gr. 0.9).....	fl. ℥ix.
Glycerine, c. p.....	℥vi.
Distilled water.....	q.s.ft. ℥xx.

Mix the glycerine with four ounces of the water, in which dissolve the sulphate of copper with the aid of gentle heat. Dissolve the caustic potash in four ounces of the water and mix the two solutions. When cool add the ammonia, and then distilled water to make the whole measure twenty ounces.

The test is made by pouring into a flask or large beaker glass precisely ten drachms of the test solution, to this add twenty drachms of distilled water and bring to the boiling point. With a graduated pipette, or burette, con-

taining the urine to be examined, add the urine slowly, drop by drop, all the while agitating the boiling solution. When the blue color begins to fade, the suspected urine is added more slowly still (two to five seconds elapsing after each drop) until all the blue color in the solution has disappeared, and a transparent solution remains. The amount of urine necessary to reduce this solution is now

Fig. 84.



BLEES-MOORE INSTRUMENT CO.

Einhorn's Saccharometer.

## EXPLANATION OF FIGURES ON SACCHAROMETER.

1, 2, 3, 4, 5, mean cubic centimeters;  $\frac{1}{4}$  per cent.,  $\frac{1}{2}$  per cent.,  $\frac{3}{4}$  per cent., 1 per cent., or their equivalents 2-8, 4-4, 6-8, 8-8, indicate by the quantity of gas the percentage of sugar in the urine.

If the gas extends to 2 then the urine contains  $\frac{1}{4}$  per cent. of sugar. If the gas extends half way between  $\frac{1}{4}$  and  $\frac{3}{4}$  (4-8 and 6-8) then the percentage is (4-8 plus 1-8 equals)  $\frac{1}{2}$ .

known by the number of the drops added, and by reference to the graduated pipette or burette; and the number of the grains of sugar to each ounce of urine is determined by dividing 480, the number of grains in an ounce, by the number of the minims of the urine necessary to re-



duce ten drachms of the solution (or rather to dissipate the blue color) and this by three for precisely one-third of a grain of grape-sugar reduces ten drachms of the solution.

Example:

If it requires 20 minims of urine to reduce ten drachms of the solution as above, we have  $\frac{4.80}{3} \div 3 = 8$  grains of sugar to the ounce of urine.

The fermentation test is quite reliable. The addition of yeast to saccharine urine produces alcohol by liberating carbon dioxide gas and other products that lower the specific gravity of the urine. Each degree of specific gravity lost in this process of fermentation represents one grain of sugar to the ounce of urine. To apply this test, determine the specific gravity of the urine before the addition of the yeast. The urine is now mixed with fresh yeast, poured into a loosely corked bottle and placed in a warm room for twenty-four hours. The clear urine is now poured into the urinometer cup and its specific gravity taken and compared with the first.

Example:

The specific gravity before fermentation was.....1.035

The specific gravity after fermentation is.....1.015

---

The number of grains of sugar per ounce is..... 20

The Einhorn saccharometer (Fig. 84) is a convenient instrument for the estimation of sugar. It is used by filling the stem of the instrument with urine, to which yeast has been added, placing same for twenty-four hours in a warm room; as fermentation progresses the gases rise to the top of the stem, displacing the urine downward into the bowl; the amount of sugar present is estimated by the volume of gas generated, which is noted on the graduated stem on a line with the upper surface of the urine.

## CHAPTER XII.

HYDROCELE — VARICOCELE — HÆMATOCELE — SPERMATOCELE —  
TUMORS OF THE TESTICLE—STONE-ACHE—  
NEURALGIA OF THE TESTICLE.

### Hydrocele.

The literal definition of hydrocele is water tumor. The collection of serous fluid between the layers of the tunica vaginalis constitutes the condition under consideration. This tumor may be congenital or acquired, congenital when the communication between the abdomen and this cavity is not closed by nature; and acquired when from disturbances of circulation there is secreted this serous material beyond the power of absorption.

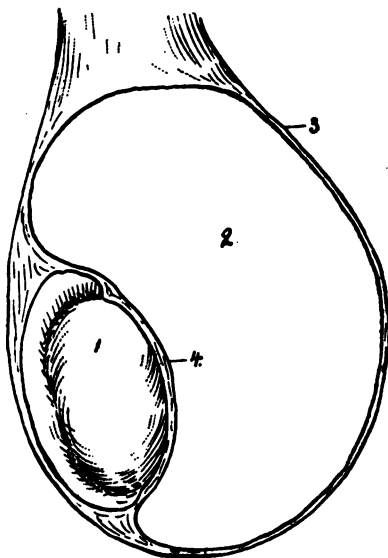
The causes resulting in the production of this accumulation are all forms of inflammation of this region. When there is acute inflammation accompanied by hydrocele there is no treatment indicated except that for the underlying cause, the hydrocele is expected to disappear upon the cessation of same. The form of tumor usually complained of is distinctly chronic; it develops slowly as the result of friction, irritation or some form of injury. In the cachetic, and individuals suffering blood depravity a form of dropsy here is common; within itself it needs no treatment beyond palliation.

The rheumatic, with diseased vessels, suffer from a form of hydrocele that in no way is dependent upon inflammation of the tunica vaginalis, but to arterial sclerosis, hence all operations looking toward the obliteration of

the sac will be disappointing. Fig. 85 will afford a very correct idea of the relation of the fluid to the tunica vaginalis, and Fig. 86 is a picture of an average hydrocele tumor.

Hydrocele may exist so small as scarcely attracts attention, or to the extent that the patient finds difficulty in

FIG. 85.



Hydrocele.

- |                     |  |
|---------------------|--|
| 1. Testicle.        | 3. Parietal layer of tunica vaginalis. |
| 2. Hydrocele fluid. | 4. Visceral layer of tunica vaginalis. |

supporting the scrotum. Several times I have operated when the tumor was the size of a child's head. Hydrocele may appear in the spermatic cord, above the cavity of the tunica vaginalis proper, in which situation it is known as hydrocele of the cord.



**Diagnosis.**

The diagnosis of hydrocele is usually quite easy; there are many conditions, however, that give rise to a tumor here and should be considered namely, hernia, epididymitis, orchitis, cellulitis, malignant tumors, tuberculosis,

FIG. 86.



Ordinary Hydrocele Tumor.

syphilitic disease of the testicle, hæmatocele, spermatocele and epiplocele.

It is with hernia that hydrocele should be especially contrasted; the following table will make plain the features in common, and the differences that exist.

**Table of Differential Diagnosis.**

HYDROCELE.	HERNIA.
1. Develops slowly.	1. Develops suddenly.
2. Begins to form at bottom of scrotum and develops upward.	2. Begins at top of scrotum and develops downward.
3. It always fluctuates and feels firm.	3. Rarely fluctuates and feels doughy.
4. The percussion note is always dull.	4. Percussion note is resonant.
5. Inability to feel the testicle.	5. Can always feel the testicle.
6. Tumor cannot be reduced except it be congenital.	6. Can be reduced by taxis, except it be incarcerated.
7. The spermatic cord above the tumor is normal.	7. The spermatic cord above is related with the gut, and cannot always be distinguished.
8. The shape and size of the tumor is constant.	8. The shape and size of the tumor changes.
9. The tumor is translucent.	9. The tumor is not translucent.
10. No impulse with coughing except it be congenital.	10. Impulse with coughing is perceptible.

By the observance of the above a diagnosis can be made which is readily verified with the puncture of a hypodermic needle, and the removal of a few drops of the serous fluid. What has been said in connection with the various diseases of the testicle will readily clear the situation of further doubt.

**Treatment.**

The object of treatment is to remove the accumulation of fluid and prevent its reappearance. Those forms of acute hydrocele, associated with inflammatory diseases of the testicle and epididymis, demand only such attention as is favorable to the exciting causes. Those fluid accumulations, the result of organic disease, or rather those dropsical conditions, often require palliative tapping, in addition to treatment of the original trouble. Ordinarily hydrocele is curable; it is only in these remote conditions already mentioned that it is difficult or impossible to cure.



In prescribing a treatment for congenital hydrocele it is to be remembered that the cavity of the tumor communicates directly with the abdominal, and great caution is urged in making irritating injections into such sacs.

Often a pad or truss applied to the neck of the sac, and worn after the fluid has been returned into the abdominal cavity, will cure. At times the canal closes, which is known by our inability to reduce the tumor. When this condition is met, simple evacuation of the sac is all that is necessary. Several times I have opened the sac and inserted antiseptic drainage with good results. The surest method is essentially the operation for hernia; a dissection is made, the funiculo-vaginal tunic is separated from the spermatic cord and neighboring parts; this is divided above the testicle and made to serve the purpose of a tunica vaginalis proper; the remaining portion of the sac is sutured in the opening. In this operation all precaution against infection should be taken. Hydrocele that is uncomplicated may be radically cured in a number of ways. The practice of injecting irritants into the cavity of the tunica vaginalis after emptying it of its contents is an old one. For this purpose a long list of substances have been used with more or less satisfaction. The object of such treatment is to provide adhesive inflammation in the sac that will agglutinate its surface and thereby obliterate the cavity. In dealing with hydrocele the surgeon will be impressed with two facts; the first is, how little is sometimes necessary to cure a long-standing hydrocele; and, second, how difficult it sometimes becomes to cure a relatively simple hydrocele. In this connection I recall a number of cases where a diagnosis had been made and verified with the hypodermic syringe and the date of operation fixed, the patient returning a few days later much improved and declining, for the time, further treatment. A number of



such patients have been cured by this simple operation, while, on the other hand, radical measures have failed. Tapping with a trocar, puncturing with a bistoury or evacuating with an aspirator (while occasionally curative), cannot be depended upon except for temporary relief.

The radical measures in vogue for cure are injection, opening, suturing and packing, the establishment of permanent drainage and the removal of the sac.

Certainly a very large percentage of cases of hydrocele can be cured with injections, and as a routine practice, no doubt this is distinctly the most applicable; it is done without a knife (this fact alone is an argument in its favor with the laity), often with little suffering, practically no detention from business and relatively safe. Tr. iodine, alcohol, sol. bichloride of mercury, spts. of nitre, fl. ex. thuja and carbolic acid are the remedies used. This list of remedies (which is incomplete), I think, could be shortened, for carbolic acid has demonstrated its superiority over all the rest. I have used tr. of iodine and fl. ex. thuja (as prepared by Lloyd Bros.) with success, but, all things considered, they are inferior to pure carbolic acid. The technique of injection with this latter is as follows: The patient is cleansed and the part shaved; upon the anterior and middle aspect of the tumor; immediately beneath the skin ten drops of five per cent solution of cocaine are distributed (in a perpendicular line an inch long); at the upper portion of the cocainized area a hypodermic needle is inserted into the cavity of the tunica vaginalis, where it is held in place (which is known by a few drops of fluid escaping). The tumor is now grasped from its under portion, making the fluid press tightly against the anterior surface.

Now in the lower cocainized area about one-half inch below the hypodermic needle, a small trocar and canula,

or aspirating needle is passed just through the tunica vaginalis and into the cavity (not touching the testicle) and the fluid completely removed (it is important that all the fluid be disposed of for the reason that the acid when applied should be diluted as little as possible.)

The canula or aspirating needle should now be withdrawn and the punctured spot held tightly. The hypodermic needle already in place is fitted to a syringe holding from twenty to sixty minims (according as the sac is large or small), of pure carbolic acid, diluted with the minimum amount of glycerine to keep it liquid, this is now slowly discharged into the hydrocele sac, the needle removed and the sac manipulated in a way that will bring the acid into contact with its entire inner surface, the two punctured points are now dried and touched with colodion, the scrotum is covered with an antiseptic gauze and suspended in a bandage.

The reaction may be slight or it may run high, it is customary for the side to swell, become hard, congested and painful for a few days, after which the symptoms gradually disappear and the cure is effected.

I think a rather active reaction is to be preferred. Some authors claim a percentage of cures by this method little less than perfect. I am forced to confess that I have been unable to cure with a single operation no more than 76 per cent.

#### **The Open Operation.**

This operation in my hands has returned the greatest number of successes, and is the one I recommend when the injection has failed or when it is imperative to cure the first time.

The patient is prepared and cocainized as before. The anterior aspect of the tumor is made prominent and tense by grasping the lower and under portion; an incision



about two to four inches long is made upon the anterior surface down to the tunica vaginalis, a trocar is now introduced and the fluid withdrawn. The tunica vaginalis is opened to the same extent as the skin wound, its edges are now drawn out and stitched to the edge of the skin with a continuous cat-gut suture. The cavity of the tunica vaginalis is packed with iodoform gauze and the scrotum dressed and suspended. Following this operation there is swelling especially if the patient continues upon his feet. The gauze is removed in a few days and replaced by a smaller quantity, in this way the cavity of the tunica becomes obliterated and the cure established.

#### **Dissection of the Tunica Vaginalis.**

Having failed to cure by the other operations, or if from the history and nature of the case it is believed a more radical operation is indicated, the tunica vaginalis may be removed, thereby making impossible a recurrence on account of any disease or disturbance in this part. This operation consists in making the same incision as in the open operation except it should extend from the top to the bottom of the scrotum, puncturing and incising as before, after which the tunica vaginalis is dissected out. I have not found it necessary to cut it off close to its attachment with the epididymis and testicle, but leave about half an inch. The wound is packed lightly with iodoform gauze and closed with silk sutures; all except an opening at the dependent angle where the gauze is brought out for drainage. I have often closed the wound completely with the best results, but believe it better as routine practice to drain for a few days. The after care of the patient will consist in keeping him upon his back, the part well suspended and protected until union is complete and inflammation abates.



**Varicocele.**

A varicosed condition of the pampiniform plexus of veins constitutes varicocele. This enlargement may be so slight that its recognition may be accidental, or so pronounced that it becomes a serious inconvenience.

It occurs almost invariably on the left side, which is thus explained: The left testicle hangs lower than the

FIG. 87.



An Average Varicocele.

right, the sigmoid flexure of the colon interferes with circulation on this side, the left spermatic vein empties into the left renal vein at a right angle, while the right empties into the ascending vena cava at an acute angle. Again, the veins in this situation are poorly supplied with valves, they are surrounded only by loose connective tissue, and

are poorly supported when compared with veins in other situations. Their course is through the inguinal canal, which is often very narrow, hence its frequent occurrence upon the left side.

Varicocele is conspicuous during the period of early manhood. Quite 80 per cent of the author's cases have assigned the starting point of such trouble during the developing and ripening period of the sexual make-up.

It is a condition very prevalent, one adult male from every nine to twelve is about the ratio. It is very important as will be subsequently shown.

#### **Causes.**

There are many things cited as causes for the development of varicocele; injuries, severe straining, certain diseases and constipation, and there is no doubt that they do act in this direction.

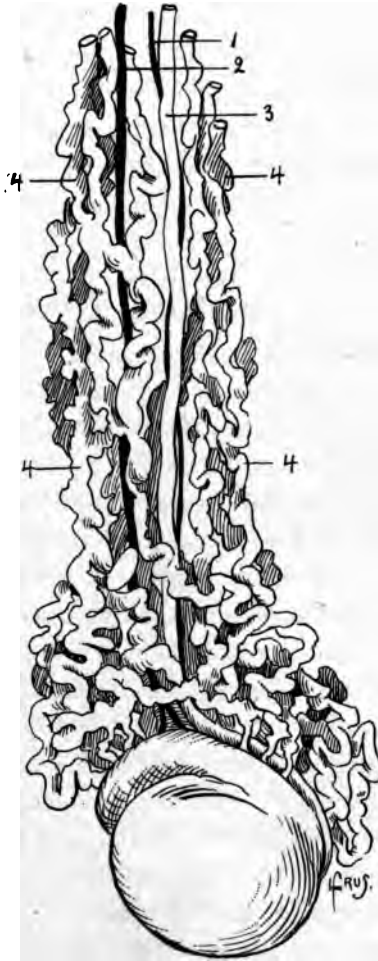
Basing an opinion on personal observation, I am forced to believe that prolonged and ungratified sexual desire and the extensive indulgence in those practices that such a state favors, is responsible for quite a large percentage of varices of this region. The influence of a perverted state of the local genital center invites extensive and prolonged congestion, and varicocele is but a natural consequence of such an unnatural state.

#### **The Symptoms.**

Varicocele offers a train of symptoms as vague and indefinite as can well be conceived. A tumor, more or less distinct, is constant. It is larger when standing, especially if the scrotum be handled. Elevation of the hips tend to reduce it. To the sense of touch the distended and tortuous veins resemble a bunch of earth worms (Fig. 88). With a fair and thin skin the veins may be

seen, the mass of vessels is thickest at the bottom of the scrotum, and disturbs the nutrition of the testicle in a double way. Pain of a neuralgic type is often complained

FIG. 88.



Relations of the pampiniform plexus of veins in varicocele.

- |                                |                    |
|--------------------------------|--------------------|
| 1. Spermatic artery.           | 3. Vas deferens.   |
| 2. Artery of the vas deferens. | 4. Varicose veins. |

of. This may be referred to the testicle, the spermatic cord, the urethra or penis; oftener, however, the pain or



disturbance cannot be described or located; but a restless, uneasy and miserable depression that haunts the sufferer beyond measure, or a dull, heavy, dragging sensation may be noticed. No doubt much of the trouble associated with varicocele is psychic, and largely due to the literature of the advertising quack; for the majority of my patients have shown unmistakable evidence of having seriously studied this free literature and many times fallen victim to their proposals and become hypochondriacs, either on account of the disease or the treatment; it would be difficult to decide.

#### The Treatment.

To advise a treatment for varicocele, one that will correct the real and fancied defects, is a matter that taxes one's resources severely, and I am firmly convinced that this subject is one too often underestimated. Text-book advice is the guide that most of us are forced to seek during early professional life, and the usual recommendations found are worthy of severe condemnation. A young man will present himself to you a picture of despair, and, in a sense, an object of pity. He will assert his claims for professional care, possibly through a perverted imagination, for very often he will have an exaggerated estimate of his ill; he will suffer pain, inconvenience and distress, and be totally unfit for anything; which to our mind may seem unwarranted. We may not be able to explain or understand. We advise such a patient to wear a suspensory bandage, go about his affairs with a light heart and have no further thought of his condition. It is customary also to aim to purge his thoughts of everything sexual or evil, simply by telling him not to think of such things and then he will be well.

Such disposal of this class of cases does not dispose of their trouble. It is this form of advice, upon the part of the

medical practitioner, that deepens their troubles, and drives them by the thousand into the outstretched arms of the merciless quack. Such advice as this if taken, no doubt, would benefit the average case, but it is as impossible for this advice to be accepted as it is to overturn the order of nature, or reverse the law of gravity.

From some cause at least, the local sexual center is brought to a state of undue activity, and there is no real reason to believe other than the existing varicocele is wholly or in part responsible.

We may find nothing else, and to advise purity of thought in the face of such distress, without first making it possible, is conduct quite beyond their power. I am not inclined to believe that people complain, suffer or behave unusual without cause, and in the matter of varicocele, when there is a congestion, a mass of enlarged and much distorted vessels, there is positive evidence of disturbed circulation, there is at hand abundant cause for the display of symptoms and open field for needed labor.

From this brief outline of thought, together with its practical application, as will soon be mentioned, the writer is firm in such conviction. Marriage will often benefit such patients, it is true, for on account of proper relations relief comes to the disturbed sexual region. The use of a close-fitting suspensory bandage is of service; sexual and urethral hygiene is of great importance.

If the tumor is small, and little or no attention has been given it, the case can be prescribed for by directing a suspensory bandage to be worn constantly, keeping the bowels open and the sexual organs at rest. Such conditions, however, are the exceptions. It is seldom that such treatment will meet the wishes of the case; when more radical measures become necessary.



While we agree that varicocele does not directly shorten life, and we do not consider it in a serious sense, yet sufferers will complain, they will run from one physician to another looking for cure, they become unfit physically and mentally, to discharge their offices; they go mad, contemplate and destroy themselves. Whether the condition is responsible or not, the facts stand for themselves and plainly point out the duty of the surgeon.

Many operations for this disease have been proposed; clamps, pressure appliances and injections. There are only a few, however, that present claims for favor. Perhaps the most popular operation today is the subcutaneous ligation of the vessels. With the patient standing, and a long needle with its eye in the point, threaded with a substantial silk ligature, the veins are separated from the vas deferens and artery, and the scrotum transfixes by passing the threaded needle between these structures. When the threaded point of the needle passes out on the opposite side, the suture is removed from the eye, and the needle is withdrawn until its point clears the veins. Now the needle is made to pass anterior to the mass of veins and out the second punctured point beside the suture. The needle is now threaded with the suture and drawn out the original puncture, bringing with it the suture. A loop is in this way thrown about the mass of veins and both ends of the suture are presenting at the first point of puncture; which are now firmly tied with a double knot, cut short and permitted to enter the scrotal cavity. The veins may be ligated in this way at one or more points. It is claimed for this method that it can be done with little pain and detention from business. No knife, no blood and with minimum danger, and there is but slight swelling. Several times I have done this operation and for many reasons think it good. My objections,



however, have grown since the adoption of another, which I think better. The objection is that this, too, is an operation in the dark; that there are times when it is impossible to separate the veins from the arteries and the vas deferens; that the difference in pain, swelling and detention from business is no less than the open operation, which, in consequence of its being open, enables a perfectly correct selection of the vessels ligated.

The operation that I prefer to all others and the one, to my mind, having the fewest objections and the greatest advantages, is performed as follows: The parts are shaved and cleansed, the patient is placed half recumbent, cocaine is distributed under the skin for about two inches, extending from the upper surface of the testicle to the external abdominal ring, upon the anterior scrotal aspect. The tissues are divided down to the thin delicate fascia that envelops the veins (pressure from below forces the plexus of veins into the incision). A blunt pointed aneurism needle is armed with a substantial sterilized silk ligature, and the mass of veins and spermatic cord are raised upon it. The vas deferens and artery and the spermatic artery are released, leaving only the veins; the ligature is held and the needle withdrawn. The ligature is now cut in the center, making two; one is adjusted to the veins at the upper angle of the wound and securely tied, the other is applied at the lower angle of the wound and the veins here tied. Now, if the spermatic cord is too long and the scrotum redundant, I cut the bundle of veins one-fourth inch from the two ligatures and remove the excised part. Thread a needle to one of the ligatures at upper portion, pass it through the stump from left to right; the other stump is treated the same, except the needle is passed through this stump from right to left. There will now be the four ends

of the two ligatures, two above and two below; these are tied the right above to the right below, the left above to left below, thereby bringing together the two stumps and shortening the cord. I then resect the scrotum by marking the surface, applying Henry's scrotal clamp (Fig. 89), placing sutures, cutting off redundant scrotum with strong scissors and closing the wound.

About once in eight or ten times, resection of the scrotum with shortening of the cord is necessary. Simply cutting down to the veins and ligating as above is all that is indicated, and when only this is done, I must confess that I believe it less dangerous and less painful, more scientific and correspondingly more satisfactory than the

FIG. 89.



BLEES-MOORE INSTRUMENT CO.

Henry's Scrotal Clamp.

subcutaneous ligation. Such a patient should be put to bed until the effects of the operation have passed off and the parts permit being suspended in a bandage. I have often operated in my office and in an hour the patient would go home, return in a few days with no pain, little swelling and free from the annoyance of the original condition. I prefer having such patients in a hospital, but believe, with this operation, it is as safe as the subcutaneous method and patients are equally free to care for themselves. Again, when the open operation is done, you are sure the spermatic cord has not been ligated, an accident that I have seen from the subcutaneous operation performed by very competent men.

**Hæmatocele.**

Is a tumor composed of blood; this may be effusion into the scrotal tissues, into the cavity of the tunica vaginalis or within the tunica albuginea.

Idiopathically, it is a rare affection; it is usually the result of injury; it might be due to the rupture of a blood vessel that is diseased. It will be recognized by the history of the case, the character of the tumor, its appearance and exploratory puncture.

The treatment should be free purgation, rest, the administration of ergot, iron or tannic acid and the application of cold.

Should the tumor increase, it may be freely opened, the parts washed, bleeding vessels controlled, the wound closed, or packed and left open.

**Dermoid Cysts**

Of the testicle are occasionally met, they may be within or without the tunica albuginea, they are of slow growth, not painful, and are readily removed. Their contents may be hair, bone, cheesy matter, or a mixture of the three.

**Spermatocele.**

From the anatomy of the testicle (Fig. 4, page 21, No. 25) it is shown that here is found the remains of the duct of Müller. This may undergo a cystic degeneration, become quite conspicuous and be filled with spermatic fluid, or due to some defect in the tunica albuginea the spermatic element may find its way into the tunica vaginalis; in either situation spermatocele results. The usual sign of tumor will be at hand, the hypodermic syringe will enable a diagnosis, there is little pain associated with it.



Treatment will consist in removing the collection and injecting carbolic acid, or a free incision is made and the wound is packed and permitted to close by granulation.

#### **Stone-Ache.**

For the want of a better term, I have accustomed myself to make use of the above. By stone-ache is meant that highly congested and exquisitely painful state of the testicles, epididymes, vasa deferentia, seminal vesicles and prostate, that comes as the result of prolonged toying with the female without relief.

The diagnosis is readily made. The treatment should be a full dose of bromide potash, hot rectal injection, ice to the perineum, elevation of the hips, ten grains of phenacetine and paint the testicle with ichthyol and guaiacol.

#### **Neuralgia of the Testicle.**

As its name implies, is a painful affection of the organ. I have many times been called to treat such cases and found difficulty in locating its cause. The entire genital organization should be canvassed in search of the same, which may be disease in the testicle, epididymis, or a small tumor, or disease of the urethra; malaria may be responsible; often a neuralgia of this type has been associated with the disease, which would come and go with the fever. When of such origin, quinine, iron and arsenic will cure. In two recent cases, due to anæmia, in which there were pronounced sexual disturbances, I used arsenauro with much satisfaction. Hygiene, good food, pure air and exercise will ordinarily effect a cure. Hydrotherapy may be used, friction to the spine and electricity.

## CHAPTER XIII.

CRYPTORCHIDISM — MONORCHIDISM — SUPERNUMERARY TESTICLES—INJURIES OF THE TESTICLES—ATROPHY AND HYPERTROPHY OF THE TESTICLES—TUBERCULOSIS—SYPHILIS AND MALIGNANT DISEASE OF THE TESTICLES—CASTRATION.

### **Cryptorchidism**

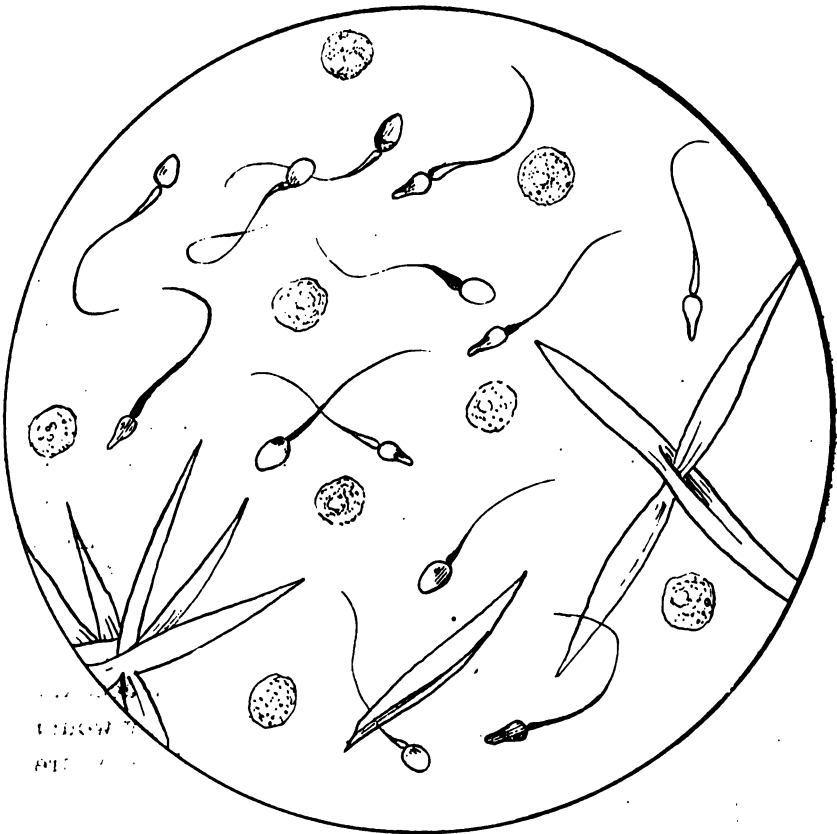
Is that condition of a male in which the scrotum does not contain a testicle.

When a male is well developed generally, and this defect exists, it is presumed that at some point in the abdomen, inguinal canal, or perineum, the testicles have been arrested and lodged. If the male be an adult and exhibits a reasonable development of the penis, sexual desires, with ejaculation containing spermatozoa, this is conclusive evidence of the existence of these organs. A careful examination will usually reveal their presence, which will most frequently be in the inguinal canal. The peculiar sickening pain when the testicle or cord is pressed is pathognomonic. The glands, on account of their unnatural environment, are frequently undeveloped, or on account of pressure are diseased; in either instance sterility would result. It is by no means invariable that cryptorchids are afflicted in this way, for I now recall a family, the paternity of which was a cryptorchid.

To test the virility of such a subject, the discharge should be examined with a microscope, and upon the presence or absence of spermatozoa (Fig. 90) alone can an opinion be founded.

Much inconvenience and embarrassment may result from such defects; mental worry and neurasthenia often make surgical interference imperative. Should epididymitis, orchitis or other disease develop in the testicle when in such unnatural situation, it might lead to serious complications.

FIG. 90.



Spermatozoa.

There are conditions that can be nicely corrected, when the scrotum has developed and the testicle located in the inguinal canal, and the cord is normal, the part may be opened, the organ brought into place and anchored to the



bottom of the scrotum. Often the patient cannot bear this; the tension on the cord, after bringing the testicle down, being such that unbearable pain results and the testicle must be liberated. Twice have I been forced to allow the organ to retire to its former place in the inguinal canal after it had been planted in the scrotum for ten days. In both cases, however, the general tone of the patient was much improved. Frequently the organ is sacrificed and removal is indicated.

When the cord is too short, the epididymis may be loosened and teased out, making the vas deferens any desired length.

#### **Monorchidism**

Is essentially the same as cryptorchidism, except that there is one testicle in the scrotum and one absent. In other respects the conditions are identical.

#### **Supernumerary Testicles.**

Possibly there are individuals endowed with more than two such organs. The cases which have come to my notice (which have not been more than a dozen) were tumors of varying size that were mistaken for testicles. In no instance have I found such bodies to be of glandular construction. Seven times I have operated for such tumors; five times the tumor has been cystic, with straw-colored fluid, and attached to the cord; once a sebaceous cyst, and once a dermoid cyst.

#### **Injuries to the Testicles.**

The testicles are subject to a great variety of injuries, both legitimate, and injuries from insanity.

Kicks and bruises, falling astride carriage wheels, and hurts by machinery. The organ may be cut, punctured or lacerated.

Very extreme injuries may recover with astonishing rapidity and leave but slight evidence.

The recumbent position, elevation of the scrotum, the application of cold or heat, regulation of the bowels will suffice in all ordinary contusions, while control of hemorrhage, surgical cleanliness, replacement of the parts and rest will meet the requirements in ordinary incised, or lacerated wounds.

The secreting structure of the testicle may prolapse through a wound of the tunica albuginea. It should be cleansed, returned and the tunica closed with fine silk sutures.

When infection of extensive wounds of this region takes place the scrotum may swell, become gangrenous and slough, leaving the testicle without proper covering. Under these circumstances I have seen nature do excellent work; warmth, wet bichloride dressings, absolute rest, good food and hygiene are indicated. When free from infection, skin from convenient parts may be taken to make up the deficiency.

#### **Atrophy and Hypertrophy of the Testicles.**

Atrophy of the testicles may occur from a number of causes. It has been shown that many diseases, inflammatory in character, can bring about such a condition and atrophy of these organs should call for a search of the underlying cause. I believe syphilis is responsible much oftener than is generally believed. Sexual depravity may be the cause.

Hypertrophy of the testicle is natural, when on account of the congenital absence of one, or the loss of one through disease or injury, it is then the compensatory effort of nature. I am not aware of true hypertrophy under other conditions.

The treatment for atrophy is that of the disease so expressing itself. There is no indication for treatment in hypertrophy.



**Tuberculosis, Syphilis and Malignant Disease of the Testicles.**

When a patient exhibits enlargement of one or both testicles and this enlargement is not due to acute disease, traumatism, hernia, hydrocele, varicocele, hæmatocele, etc.; when the organ itself is enlarged, hard, painful in a mild degree and has developed slowly and with few symptoms, one of these three conditions may be suspected and differentiation often requires much study. Such a patient should be examined minutely for syphilis, and should any condition or history be developed that points to such disease, improvement and possibly a cure can be expected; from twenty to thirty grains of iodide of potash, given three times a day, or Rxs. 65 and 66 may be used and the progress watched:

## No. 65.

Rx.—Mercauro ..... ℥i  
S. Twelve drops in water  
after each meal.

## No. 66.

Rx.—Hydrarg. biehler.....gr. ii  
Kali. iodid.....℥i  
Peps. Cordial (P. D. &  
Co.).....℥iv  
M. ft. sol.  
S. A teaspoonful in water  
after each meal.

If, after several weeks treatment, there is no improvement, Rx. 65 may be used by increasing the dose to fourteen drops.

In the absence of any evidence of syphilis, a search for tuberculosis should be made. If found, and the tumor be the only focus of tuberculous infection, its removal should be insisted upon.

In the absence of evidence of tuberculosis and syphilis, the presumption is malignant disease, and a search in this direction for corroborative evidence should be undertaken. An exploratory incision is justifiable; little or no harm



will be done such an organ, and the microscope may then show tubercle bacilli or cancer cells. The appended table will facilitate recognition of such diseases:

	SYPHILIS OF TESTICLE.	TUBERCULOSIS OF TESTICLE.	CARCINOMA OF TESTICLE.
<i>History</i> .....	Specific history. Between the ages of 20 and 35 years, usually, Disease attacks the body of testicle.	Often a tubercular history. Rare after middle life. Disease attacks the epididymis, as a rule.	No history. No special time of life (middle life less than the two extremes). Disease attacks the glandular part of organ.
<i>Physical features, size and shape</i> .....	Smooth and hard. Never very large. Regular in shape.	Nodular, hard. Rarely very large. Irregular shape.	Hard, with fluctuat- ing areas. Attains large pro- portions. Irregular.
<i>Subjective features</i> .....	Little pain, even from pressure. Slow development. Rarely breaks down. Dragging pain.	Usually slight pain from pressure, at times neuralgic. Slow development. Usually breaks down.	Slight, or no pain on pressure. Rather rapid devel- opment. Breaks down and develops fungus.
<i>Course and prognosis</i> .....	Lymphatic glands rarely involved. Skin of scrotum but slightly altered. May continue years. It is curable.	Lymphatics may or may not become inflamed. Skin gives way as breaking down of organ advances. Rarely curable. May continue years.	Lymphatic glands and neighboring parts become in- volved. Skin and scrotal veins undergo changes. Almost always fatal within two years.

#### Castration, or the Removal of One or Both Testicles

Is an operation serviceable many times where it is permitted once; it will never grow in favor or become popular for reasons peculiar to the gender. It is often impossible to gain the consent of the patient to relieve him of pain, free him from disease and add years of comfort to his life through the removal of a useless testicle. Everything else must be tried first, and even when he is told the disease is cancer, he will insist upon delay which may be fatal. The operation itself is an easy one. I have several times performed it with cocaine anæsthesia.

The parts should be shaven and cleansed surgically, an incision beginning slightly below the external abdominal ring and continued upon the anterior aspect of the scrotum to the bottom, dividing everything to the tunica vaginalis; bleeding vessels are now caught and twisted, the parts sponged and the tunica vaginalis opened to the extent of the skin wound; the spermatic cord is now ligated with sterilized silk in two places and divided; the testicle is now detached from the scrotum with the fingers or handle of scalpel and removed; all bleeding is controlled, the cavity lightly packed with iodoform gauze, leaving the end in the lower angle of the wound. The cord is now examined; if no bleeding is noticed, the ligature is cut short and the stump released. The wound is now closed, leaving the drainage from the bottom which is removed in two or three days; in eight days the sutures may be removed and in two weeks the patient may leave his bed. Some recommend that the vessels of the cord be ligated individually, that neuralgia and tetanus may be prevented. In experimental work upon rabbits and dogs—I have operated a great number of times both ways—I have not ligated the cord at all, perhaps a dozen or more times, and have never seen a death.

## CHAPTER XIV.

PHYSIOLOGY OF ERECTION—IMPOTENCE—STERILITY—MASTUR-  
BATION—NOCTURNAL AND DIURNAL POLLUTIONS—SPER-  
MATORRHOEA—INVERSION AND PERVERSION OF  
THE SEXUAL FANCY—NEURASTHENIA SEX-  
UALIS—SEXUAL IMPULSE—SEXUAL  
INFELICITY—THE METHODS  
OF THE QUACK.

### Physiology of Erection.

That the subjects to be considered in this chapter may be more clearly appreciated, normal erection and ejaculation of motile spermatozoa deserve understanding.

The several components of the male genitalia, as described in the first chapter of this book, are to be remembered.

The penis in a tranquil state, with its arteries contracted, receiving no more blood than is necessary for its nutrition, and with the spaces of its erectile bodies obliterated. Now, through a sexual impulse which may be developed from the brain centre, through the lumbar spinal, or the local centre, or through stimulation of some of the fibres of the nerves coming from the lumbar nerves, called the *nervi erigentes*. By virtue of such stimulation, which may be through the sense of sight, smell, sound, touch, or thought; the arteries of the parts become relaxed, the muscular features of the cavernous and spongy tissues dilate, thus opening their spaces, and, in consequence, more blood is received and retained in this member. As this con-



gestion advances, all portions become highly vascular and warmly nourished, the penis begins to swell in all its directions, the urethral glands begin active work and produce their own secretions in normal quantities. The fibrous fascia of the organ is put upon the stretch on account of the pressure from within, the veins are in this way compressed, and the outflow of blood reduced. During the while the penis slowly and steadily raises itself from a perpendicular to a horizontal position, which is accomplished by the influx of blood, contraction of its suspensory ligament, erector penis and accelerator urinæ, muscles; erection is further aided by the compressor urethræ and the perineal group of muscles; which latter do much toward limiting the return of venous blood, and thereby prolonging the stage of congestion. The penis now stands fully erect at an angle in excess of ninety degrees from its flaccid condition. In this rigid state, the arterial impulse is distinct (it throbs), while the stimulation to the deep muscles cause a spasmodic jerking, oscillating, upward movement. The urethra will be bathed with mucus, Cowpers and the prostatic glands are at work, the verumontanum swells, blocking the posterior urethra, and sexual desire runs high. The culmination of such excitation approaches, all functions of the genitalia are duly aroused and ready for that final concert of action. It is now that the muscular element of the prostate begins a series of spasmodic contractions, the compressor urethræ become relaxed, and the contents of the vesiculæ seminales are forced down and drawn into the bulbous urethra. (Regurgitation backwards into the bladder being prevented by the congested verumontanum blocking the posterior canal.) The urethral muscles, reinforced by the action of the perineal

group, now act upon the spermatic fluid within the canal, sending it onward in successive jets, with force sufficient to drive it with effect against the os uteri.

It will be observed that the spermatic fluid is composite, being made up of spermatozoa, the secretions from the vasa deferentia, vesiculæ seminales, prostate, cowpers and urethral glands.

#### **Impotence and Sterility.**

By impotence is understood the inability to perform the sexual act. A man, at his maturity and in normal health, should copulate, at least twice a week, discharging something like one-half to two drams of spermatic fluid, and be stronger, mentally and physically, on such account. The power is physiologically lost about the age of fifty-five years, hence the term impotence applies to that period of man's life between the ages of nineteen and fifty-five years.

The subject has been conveniently divided into organic, atonic and psychical impotence, and under these headings all forms of the disease may be considered.

#### **Organic Impotence.**

Organic impotence exists when there are irregularities of the penis, or scrotum, to such an extent that intromission is impossible, and those brain and spinal affections impairing or abolishing the sexual centres. Extreme size of the penis, preventing intromission, and those situations where the organ is bound by adhesions may cause it. The diagnosis and treatment will consist in discovering the cause of such failure of erectile power, or intromission, and employing proper treatment and surgery for the correction. Organic impotence is, therefore, a condition very often beyond remedy.



If we accept the definition of sterility in the male as inability to procreate offspring, it follows that all sufferers of impotence are sterile.

#### **Atonic Impotence.**

To this class belong all those weakened on account of local and general disease, sexual excess and demoralizing practices, as well as those whose sexuals have known no rest, due to prolonged and ungratified longings. With this form of impotence the desire may be present or it may be abolished. Erections may be substantial, and ejaculation may occur before intromission; or the erections may occur and fade away before intromission, or shortly afterward, and no ejaculation or copulation be permitted; again, both erection and sexual desire may be wanting.

The causes leading to such an end are numerous; in addition to those alluded to, certain drugs are responsible, alcohol, tobacco, the use of strychnine and atropine as given for the cure of whisky habit, the bromides, opium, lead-poisoning, coffee, etc.

When erections occur and the desire continues, and impotence is due to precipitate ejaculation or to momentary erection, the type is called irritative, as opposed to paralytic impotence, where the desire is wanting and erections do not occur.

#### **Symptoms.**

The symptoms in this condition are very pronounced, and cannot well be mistaken. There is a distinct neurotic feature in all these cases; the patient will complain of a nervous, restless or dead feeling in the sexual tract; he will be depressed in spirits, with poor digestion, will complain of vague pains anywhere from the



glans penis to his head; there may be a sensation in the urethra resembling fluid; there may be disturbance of the urinary function of a nervous kind, failure to promptly void urine or inability to retain it; there is often a cold and pale condition of the penis, a slight discharge of mucus, a weak heart, shortness of breath, an anxious and confiding bearing and a general picture of despair.

#### Diagnosis.

From the history of the case an index to the situation can be obtained. The general health should be carefully noted—the heart, the liver, the lungs, and particularly the kidneys (the two-glass test should be made). After having attended well to these preliminaries, it is my custom to now inspect the external genitals, palpate the testes, the vasa deferentia, epididymes; pinch the thigh and observe the reflex of the cremaster muscle and dartos, palpate the urethra, examine the prepuce; now pass the finger up the rectum and examine the prostate and the visiculæ seminales, and determine their tone. Now prepare a bulbous bougie with flexible stem, slowly and gently pass it down the urethra, carefully noting the condition of the parts as they are acted upon by the bulb; note all irregularities, both of the urethral calibre and of its sensation; in this way explore the entire canal and let no part of the genital tract escape notice. From such an examination all necessary information can be had, and without this complete work an opinion would not be justified.

#### Prognosis.

The prognosis of this form of impotence is good. I think about eighty per cent of all impotents belong to this division; about eighty per cent develop this in con-

sequence of gonorrhœa, ungratified sexual desire and masturbation; in ninety per cent the cause of the trouble can be located and the trouble corrected, and when we fail to do either, we have made the mistake in classifying it under the head of atonic impotence.

#### **Treatment.**

Atonic impotence requires for its successful treatment, hygiene (general) and hygiene (sexual). Bring that environment about the patient that best suits his general condition. If his trouble is due to stricture, either cut or dilate it; if a long prepuce or a tight meatus exists, dispose of them; if there is urethral inflammation, treat and cure it; if there is prostatic, vesicular or bladder inflammation, give necessary attention; in other words, treat thoroughly and well the underlying cause, and have the patient all the while deeply impressed with the fact that only one thing can come from your efforts, and that is CURE.

A condition that is responsible oftener than all others combined is a posterior urethral neurosis, in other words, an over-sensitive and tender prostatic urethra with more or less congestion in the prostate and vesicles; and those subjective sensations so universally complained of by this class of sufferers are readily understood when we consider the abundant nerve supply of this part of the canal.

The urine of such patients is frequently worthy of strict attention. Very often sugar, albumen, oxalate of lime, excess of phosphates can be found. All source of irritation should be examined for, and when possible, removed. A fissure of the anus, a rectal fistula and hemorrhoids often play a part in the causation and maintainance of this condition.



The paralytic type, that condition where there is absent both desire and erection, suggest brain, spinal or other form of organic or wasting disease, and attention should be especially searching in these directions; these cases, however, are rare as compared with the irritative form, which latter are almost invariably due to local disease or disturbance.

Tonics, electricity, cold sound, change of climate and a sea voyage are the indications for treatment in the paralytic variety.

Rxs. Nos. 67, 68, 69, 70 may be used with benefit.

No. 67.  
 R.—Strych. sul.....gr. ii  
     Phosphorus.....gr. i  
     Ext. damianæ..... $\frac{3}{4}$ iss  
     M. ft. pil. No. LX.  
     S. One pill after each meal.

No. 69.  
 R.—Fl. Ex. Nucis vom.....  
     Fl. Ex. Sanguinarie, } aa  $\frac{3}{4}$ ii  
     Fl. Ex. Cinchonæ.....  
     Fl. Ex. Matricariæ.....  
     M.  
     S. Fifteen drops in water  
     after meals.

No. 68.  
 R.—Arsenauro..... $\frac{3}{4}$ i  
     S. Ten drops in water  
     after meals.

No. 70.  
 R.—Fl. Ex. Saw. palmetto..... $\frac{3}{4}$ ii  
     Fl. Ex. Ignitia amara..... $\frac{3}{4}$ i  
     Fl. Ex. Coca..... $\frac{3}{4}$ i  
     Fl. Ex. Cascara ar..... $\frac{3}{4}$ i  
     Elix. Cinchon..... $\frac{3}{4}$ ii  
     M.  
     S. A teaspoonful in water  
     after each meal.

In dealing with the irritative, the patient will receive much benefit through the use of the cold sound, cold antiseptic irrigations, deep injections of nit. of silver (five to ten grains to the ounce), one or two drops of such a solution applied to a nervous or sensitive spot every five to eight days, strong solutions of tannic acid may be used in this way, copper sulph., five to ten grains to the ounce, thallin sulph., ten grains to the ounce, argonin, ten grains to the ounce, zinc sulpho carbolat, thirty grains to the ounce, boro-glyceride, all may be used with more or less satisfaction.



Counter irritants to the perineum; hot and cold rectal injections; weak galvanism, the negative pole to the urethra, the positive over the lumbar spine; Faradism may be used in the perineum and over the external genitals and spine; cold plunge baths, followed by brisk friction.

The psychrophor (Fig. 91) may be used for apply-

FIG. 91.



BLESS-MOORE INSTRUMENT CO.

Psychrophor.

ing heat or cold in the urethra; it is a most useful instrument in the treatment of atonic impotence; it may be used every third day. I have used it with wonderful effect by first passing cold water through it, thoroughly chilling the nerves of the urethra, then attach a fountain of water raised to about 115 degrees F. and again changing to the cold; each sitting should last about eight minutes.

Rxs. Nos. 71 and 72 may be found serviceable in quieting the sexual organs and inducing repose, for these organs bear rest remarkably well, and even if there be no erection and no desire it does not follow that wasting or degeneration is in progress.

## No. 71.

R.—Hyoscin.....gr. ss  
Fl. ex. Humuli..... $\frac{3}{i}$   
Tr. vallrianæ..... $\frac{3}{i}$   
Spts. menth. pip..... $\frac{3}{ss}$   
Tr. cardam. co..... $\frac{3}{iiss}$   
M.

S. A teaspoonful in water four times in twenty-four hours.

## No. 72.

R.—Sodii. brom..... $\frac{3}{i}$   
Liq. potass. arsen..... $\frac{3}{ss}$   
Tr. cardam. co..... $\frac{3}{ss}$   
Aqua pur..... $\frac{3}{iiss}$   
M. ft. sol.

S. A teaspoonful in water four times daily.

After local and general treatment has been carried on to a successful degree, and there can be noticed nothing in the case except the lack of desire or fear that a cure is not complete, or more properly, a lack of confidence on the part of the patient, Malt Nutrine, as prepared by The Anheuser-Busch Co., is an excellent tonic and stimulant. Gudes' ferro pepto mangan. is an ideal iron tonic. Elix. iron, quinine and strych., Phospho-Albumen Co., may be of great advantage. Ligation of the dorsal vein of the penis has been wonderfully successful.

#### **Psychical Impotence.**

In this trouble the fault is in the head—it may be purely an imaginary state. The genitals may be perfect, the patient a moral and correct man, with no history of previous venereal disease, and one who has never gone to excess in any direction, and from all obtainable evidence he may be a perfect man. He may have great sexual desire with feeble erections, or he may have desire with erections that are normal, but cannot command them at proper times; he may have desire and vigorous erections when in the presence of certain characters and a feeling of disgust for others. Usually such a patient will long for and lust after those with whom sexual relations are impossible, and have no desire whatever for others. Copulation may be possible with clothing on and erections may fail when undressed. As erections take place a sense of shame, fear or pity may develop and the erection be lost. Over-anxiety for sexual relations may prevent satisfactory erection, this is often noticed with the newly married; ardent love, admiration and respect for the new wife may result in temporary psychical impotence.



Young men who have by chance learned of the evil incident to masturbation and the disaster following nocturnal pollutions through the literature of the quack, educate themselves to believe their manhood lost, and with great hesitation and remorse lay their fancied troubles before the surgeon. The influence of alcohol, certain dispositions, occupations and surroundings may develop this form of impotence, the prognosis of which is good.

#### **Treatment.**

An examination and investigation of the patient should be made as suggested in the atonic variety, that you may be sure the case is one of psychical impotence. This prolonged and searching examination is doubly necessary; first, that no error in classification of his trouble may be committed; and, second, that the patient may be profoundly impressed with the skill, familiarity and earnestness of his attendant. With such an impression formed, the cure is half established, for the patient is now in proper form to receive suggestions; you have his confidence and respect, he will improve at your will. When such a patient has been in the hands of others it is well to be reserved, say but little, and from his story learn his disposition and the methods that were adopted by his former physician, for on no account should such measures be prescribed. Do not say, by word or act, that his previous treatment was improper, about this say as little as possible. Assure him in most positive terms that you are competent to cure him, remember well your advice to him and never recede from a position when taken. If cold sounds were used before, you are to use them warm, or none at all. If electricity has been used, you are



to apply massage; in other words, do that in which he has not lost confidence. If he has desires and no erections, endeavor to strip him of his desires by the use of bromides, camphor, hyocyamine and suggestion. If he has erections, subdue them; if he suffers nocturnal emissions, limit them, and convince him that no harm will come to him from that source. Build him up generally, improve him morally and sexually, have him do the things he least cares to do and leave off the things he would do; in other words, impress him.

If he is a married man, and has lost desires for his wife, but has desires for others, you may convince him he is mistaken. If he has been bearing sexual relations once or twice a week, but has failed for some weeks to have erection and desire, you may stimulate him, feed him, and enjoin continence upon him; advise him of the necessity of not having desires or erections for a month, of not attempting sexual relations, and he is sure to violate such trust and do himself a great good. A wife or mistress can do much to break the spell of such a sufferer. I have frequently advised them to appear attractive and girlish, repulse his solicitations; fight him off; run away from him, and practically force him to overpower her. Encouragement and artifice, the local use of cold sounds, the psychrophor, electricity, cold baths, friction, horseback riding, the bicycle, the most nutritious diet, a visit where there are no women, possibly a little surgery; enlarge the meatus, or remove the prepuce. The use of such remedies as damiana, nux vomica, gold, phosphide of zinc, ergot, cantharides (in doses of one drop of the tincture), will return his manhood.

### **Sterility.**

As previously defined, sterility is that state in which an individual is incapable of procreating offspring. It has been learned that impotence carries with it sterility; a sterile state, however, does not mean impotence. A sterile man may be fully potent; he may copulate, discharge seminal fluid and receive all the pleasure and satisfaction that his nature wishes; in fact, many men are sterile and not aware of it.

I have a patient upon whom double castration was performed at the age of thirty, who is potent. Sterility may be due to absence of, or inability to discharge, spermatic fluid, or to the absence of motile spermatozoa in the discharge. All those conditions, occluding the spermatic canal, from the ejaculatory ducts to the convoluted tube in the globus major of the epididymis may be responsible. In this way double epididymitis, inflammation in the vasa deferentia, caustic injections, stone, and surgery in the prostatic urethra, those diseases and injuries destroying the secreting function of the testes, castration, certain diseases acting upon the blood, syphilis, tuberculosis, etc., may be the underlying cause.

### **Treatment**

Is that general tonic course calculated to restore the secreting power of the testes when the fault is of such a character, and the employment of such surgery that the occluded canal may be restored, if the condition will admit; all other cases are beyond the reach of our art.

### **Masturbation.**

Masturbation (solitary vice or practice, and self-abuse) refers to the demoralizing custom of the induc-



tion of venereal orgasm upon one's self. This is usually accomplished in the human male with the hand, and quite good authority add this to the definition of the practice. I protest, for the reason that most animals masturbate; I have seen dogs, horses, monkeys, sheep and chickens. I am reliably informed by the keeper of a menagerie that goats, bear, rabbits, lions and most animals practice it. I can recall a number of patients who could masturbate with the mind, the motion of a rocking chair, the friction from horseback riding and the motion of a cart; the hand not being engaged. I believe then that masturbation is the production of venereal orgasm through mental copulation, with or without friction. Often the memory of the confirmed masturbator is poor; he cannot tell if a mental picture is cohabited with or not, but all others who have practiced it will admit that the mind is fixed upon such a scene, and sexual relations are held with such mental image.

The practice of masturbation among boys is so universal that it is the exception to find one at the age of fifteen who has not been dubbed and admitted to this chamber of veiled folly by his senior schoolmates and associates.

The practice does not always end with boyhood; it is occasionally continued throughout the active life of man. Girls are not given to such habit, as a rule, for reasons too lengthy to appear here.

The evils of masturbation are many, the practice is not as disastrous as some believe, and far worse than many teach. It is not an error that deepens nor is it one difficult to cast aside. I believe that ninety-eight per cent of boys so indulge themselves and only twelve per cent of men continue it after their maturity. It can



be said of masturbation that it is a dispoiler of sexual tone and refined morality; it is a disgusting, cowardly and unmanly habit (not disease); it is the outgrowth of corrupt association, literature and environment, largely due to inattention on the part of the parent. That the long train of infirmities and ills ascribed to its frequent and excessive indulgence, in a strict physical sense is little less important than sexual intercourse practiced to the same extent. That it is more ruinous, is due to the mental effort in producing and holding a seductive image in the mind for the accomplishment of such imaginary intercourse, and the reflections, forebodings and depression that possess the subject through the sense and knowledge of committing a wrong and inflicting injury upon himself, with a full and exaggerated idea of consequences. That masturbation is practiced oftener than copulation and is correspondingly more depressing is not because it is preferred to the latter, but for the reasons that opportunities for the solitary practice are created at will, consent of a female, suitable place, etc., is not necessary; again, masturbation does not require an erection; the penis may be flaccid at first and become erect, or it may remain flaccid throughout the entire performance of self-abuse, as opposed to sexual contact, which demands a substantial erection.

The congestion of the genitals incident to normal copulation, and that state following its completion, is distinctly different from those conditions when masturbation is resorted to; the same may be said of that acme of joy coming with the explosion of nerve force that terminates the act. Masturbators do not receive the rest, satisfaction and repose of the genitals, nor do they get that natural enjoyment. It is the nerve ex-

plosion followed by that state of momentary anæsthesia as well as the real loss of spermatic fluid that taxes the mental and physical strength.

#### Symptoms.

The masturbator, if a child or youth, will show evidence of exhaustion, will be nervous and restless, will be pale, dyspeptic and show an anxious and unnatural face expression.

If a young man, he will be dull at school, inattentive to his duties, anemic and nervous; he will shun society, be timid, bashful and forgetful; will take no interest in manly or boyish sports; will be melancholy and cowardly; he will have a weak heart, poor circulation, cold and moist extremities; and his genitals will look tired; he will have a subdued face expression.

If a man, he will be indifferent and incompetent; he will lack strength of character and manly stability; he will be ill-tempered, unreasonable, selfish, narrow, hypochondriacal, with the instincts of a cur.

#### Treatment.

The prevention of such a habit is a matter that deserves more general recognition, and this should come from father to son; it should be no less the aim of a parent to promote a robust constitution, protect, develop and mature a normal sexual organization in their sons than to engage themselves in their behalf in other directions. In fact, I think the greatest gift to a young man is in this direction. I quite appreciate the great disadvantage under which a parent must labor and know how blind we are to the imperfections of our own household; yet if a boy be guarded by vigilant parents, from the dropping of his swaddling clothes on to the



attainment of his maturity, if during this while the father interests himself in his son, makes a companion of him, supervises his association, recreation, literature and pleasure, puts before him the beauties of normal and manly habits, this pernicious practice would find fewer victims.

When the patient is believed to be given to such a fault, it is best that the father secure the confidence of such a son; do not force him to lie and conceal his weakness by asking him if he masturbates, but rather announce to him in a positive way your knowledge of his conduct, when he will either confess or become so confused that will bear out the presumption.

A long prepuce often attracts attention to the part, and masturbation is the result; when such exists circumcision is indicated.

Idleness, stimulants, indoor life, should be avoided. I know of nothing so wholesome for a masturbating young man as work upon a farm—labor that taxes the physical strength and spares the mental. A young man fresh from school, with sunken eyes, pallid cheeks, nervous and dyspeptic, if made to follow a plow six days in the week, for eight hours a day, will very soon lose all inclination for such indulgence.

It is not well to terrify a boy with exaggerated stories, or undertake to force him, by harsh means, to abandon his habit; most people may be induced, and led by reason, but refuse to be forced or driven, and the masturbator is no exception.

The following prescriptions may be used as tonics:

## No. 73.

R.—Elix. valerinate ammon... $\mathfrak{z}$ iv  
S. A teaspoonful in water  
four times a day.

## No. 74.

R.—Pil. ferr. quin. et. zinci. valerinate.  
(Schieffelin's) No. L.  
S. One after each meal.



## No. 75.

R.—Strych. nitrat ..... } aa gr. ss  
 Atropine sul ..... }  
 Ext. gentianæ ..... gr. c  
 M. ft. pil. No. L.  
 S. One after each meal.

## No. 76.

R.—Ammon. brom ..... } aa ʒii  
 Sodii. brom ..... }  
 Elix. peps. bis. et. strych. ʒiv  
 M. ft. sol.  
 S. A teaspoonful in water  
 after meals.

**Nocturnal and Diurnal Pollutions**

mean, respectively, the involuntary escape or loss of seminal fluid during sleep, or while awake.

Nocturnal emissions, attended by pleasurable dreams, occurring not oftener than twice a week with the robust and continent, are not considered a menace to health, except the individual takes notice of it, thinks, worries, and becomes hypochondriacal, or suffers real weakness and depression. It is when the emissions take place oftener, and when there is evidence of exhaustion, that such pollutions require notice. The weak and nervous, the overworked and the sensitive, complain most.

When the sexual organs have become accustomed to exercise, either through normal coition or through masturbation, and such relations or practice be discontinued, nocturnal emissions afford the most natural relief, and are to be expected. The masturbator will have such discharges more readily than one accustomed to sexual contact; his deep urethra is in a state of congestion, the nerves of sexual excitability on the alert, there is hyperæsthesia of this region and the slightest stimulation will occasion emissions; a full bladder, constipated bowels or filled seminal vesicles will evoke them. Rectal irritation, bladder, spinal, prostatic or any disease or injury disturbing the circulation of the genitals, will have such effect.

The involuntary passage of semen during the day in the form of pollutions is a condition quite rare. Very

excitable characters often have discharges of seminal fluid while fondling a female; such emissions, however, are noticed, and are therefore not involuntary. I have seen two patients afflicted in this way with whom the pollutions occurred without their knowledge. When such a condition as this exists, serious brain or spinal disease should be suspected.

#### **Treatment.**

The treatment for involuntary seminal losses should consist in making peace with the sexual apparatus; sexual and urethral hygiene rigidly observed will in most instances meet the indications. Physical outdoor work is excellent, cold douches, electricity to the spine, a hard bed with light covering, emptying the bladder several times during the night, the removal of all sources of irritation, a light dinner, and that tonic course necessary to strengthen the nervous and physical powers. Especial emphasis is placed upon the avoidance of scenes, association and literature calculated to stir the sexual. When the deep urethra is sensitive (as is frequently the case) it may be treated to tannic acid dissolved in glycerine and applied with deep urethral syringe, or silver nitrate, copper sulphate, ichthyol, etc., as recommended in posterior urethral neuroses. To quiet the sexual centers, prescriptions 73, 74, 75 and 76 may be used.

#### **Spermatorrhœa.**

Spermatorrhœa is a condition in which there is gradual loss of spermatic fluid without erotic sensation. The existence of this condition is discredited by many observers. Whether spermatorrhœa, as we accept it, be a distinct disease or a symptom of some other pathologic state, there is no doubt that such a leakage of material bearing spermatozoa is occasionally met.



Spermatorrhœa is quite rare and is oftener associated with other diseased areas than otherwise, yet I have seen many cases in whose urine could invariably be found spermatozoa, and nothing additional could be demonstrated. Young men of gullible inclination, anxious and apprehensive, whose genitals have been abused through masturbation and leveling association, apply to the surgeon for relief of what they believe to be spermatorrhœa. They will complain of suffering every weakness of mind and body; they will ascribe their extreme hopeless condition to a discharge that proves to be merely that normal mucus that bathes the urethra during erection. Most often the only visible discharge will be that glued condition of the meatus found upon awakening after the subsidence of a vigorous erection, and there may not be a spermatozoid lost.

The advertising specialist falls heir to this class of patients, and almost invariably they have gone the rounds before they find their way into reputable hands. From my records I select the first 100 cases coming to me for relief for what they believed to be spermatorrhœa, and present the following:

Ninety-one out of 100 had received treatment.

Sixty-nine out of 100 had received quack treatment.

Fourteen out of 100 had taken patent medicines or druggists' prescriptions.

Eight out of 100 had received treatment from regular surgeons.

Eighty-seven out of 100 had received quack literature.

One hundred out of 100 confessed to having masturbated.

Forty-two out of 100 had gonorrhœa once or oftener.

Five out of 100 had syphilis.

Sixty out of 100 had marked hyperæsthesia of the deep urethra.

Twenty-eight out of 100 had perceptible hyperæsthesia of the deep urethra.

Nineteen out of 100 had a stricture of the urethra.

Ninety-seven out of 100, no spermatozoa were found in the discharge or urine.



Three out of 100, spermatozoa were found in the discharge and urine.  
Seventy-four out of 100 were between the ages of fifteen and twenty years.

Eighteen out of 100 were between the ages of twenty and twenty-five years.

Three out of 100 were between the ages of twenty and thirty years.

Two out of 100 were between the ages of thirty and thirty-five years.

One out of 100 was forty-two years of age.

Two out of 100 were above forty-two years of age.

#### Diagnosis and Treatment.

Never sympathize with a young man who humbly applies for relief of such a fancied ill. He will be depressed, demoralized and abused; most often he will have but a single dollar, a poor income and is in every sense worthy of encouragement (not sympathy). Perhaps the first question he will ask, "Do you charge for consultation?" This question, together with his subdued bearing, tells his story. You may be reasonably sure that the picture of lost manhood, made hideous with a background of mental and physical decay, has been put before him. That it is this recollection from which he cannot flee or throw aside that hovers over and haunts him day and night. It is this masterpiece of the artful quack that robs the young men of their individuality and manhood. It is this literature that poisons their reason, directs their attention to parts that require no thought, drives them to a state of extreme misery and disappointment, and totally unfits them for business or pleasure.

If the United States would deny the use of the postal service to these knaves, the daily press be made responsible for the injury done by their advertisers, and the several states be made to exercise a guardianship over her subjects, spermatorrhœa, in its common acceptance, and the wretchedness of a large army of young men, would be unknown.

The influence of the mind is most powerful, and it is necessary that the thoughts be turned in a different direction. Encourage these young men, give them such work and such directions for treatment that their minds may be fully engaged.

Their urethral neuroses are often dependent upon their general nervous state, and as this improves so do the others. The over-secretion is often due to this state of mind and the excited parts; quiet the one and the other will stop. Search diligently for an underlying cause, and when found, apply proper treatment—a stricture, long prepuce, varicocele, hydrocele, urethral ulcer, diseased seminal vesicle, may be at fault; nothing should be overlooked.

#### **Inversion and Perversion of the Sexual Fancy.**

Disgusting as such matters are, yet it is imperative that the genito-urinary laborer be awake to this sad and pitiable state of the sexuality of his fellow-beings, for it is often his province to learn of the existence of this depravity at a time when much good can be done.

#### **Satyriasis**

Is that condition of the male in which there is insatiable and ungovernable desire for copulation, with full erectile power, and without apparent exhaustion or weakness resulting from excessive indulgence. With such subjects this desire is so prominent and strong that every thought and wish is bent toward the gratification of the sexual. Two types of this defect exist—the paroxysmal and the constant.

#### **Nymphomania**

Is the extreme sexual longing in the female, and is essentially the same as satyriasis. In both of these



there is usually lack or loss of will power, dependent upon cerebral degeneration, probably in the sensory zone of the cortical substance posterior to the central convolutions.

Such wanderings of the sexual taste may, and do, no doubt, emanate, or, at least, are intensified by evil association and immoral practices.

#### **Sadism**

Is a form of sexual perversion exhibited in the neuro-pathic constitution whose psychomotor centre is ever on the alert. Sexual desire so stimulates the animal or savage part of such characters as to call for atrocity and lust that cannot be restrained. It is this form of insanity that is responsible for those fiendish crimes of which we occasionally hear. To this class, no doubt, belongs "Jack, the Ripper." This insanity is largely confined to males.

#### **Masochism.**

Again, the subject may display the very opposite inclination. With the sexual desire there may be intimately associated a dominating passion for receiving or suffering punishment. This form of perversion is displayed by females, as a rule.

#### **Homosexuality.**

A very common form of perversion, and one that expresses itself in several ways, is homosexuality. The victims of this alienation find sexual gratification in certain indulgences practiced upon their own sex. In some instances there is some desire for the opposite gender, which, however, is eclipsed by the unnatural and stronger dictate.



To this class belong the unfortunate degenerates whose every act, impulse and desire simulates the opposite sex. A male, thus afflicted will have the gait, the manner and disposition of a female; he will show effeminacy in his every movement. His behavior toward the male, when circumstances are suitable, will be in line with the conduct of a passionate male in the presence of a female.

Such a pervert displays remarkable cunning. A morbid instinct teaches him to study character. He will mark his victims, so to speak, and so appeal to their sexuals that his advances will be tolerated. They may even go to the extreme, clothe themselves as women, appear upon the streets and solicit men in a way little different from the harlot. They will court the favors and intimacy of males with presents and attention, and will make personal sacrifices that their appetites may be gratified. In this extreme display of the psycho-sexual, there is disgust for sexual relations with the opposite gender.

This perversion may take the nature of pæderastia or sodomy, mutual masturbation or lesbain love. Normal copulation being impossible and disgusting to them.

#### Treatment.

The influence and power of heredity is great; the mystery of nature's doings is unfathomable—it is proof against the comprehension of man. The mightiness of environment cannot be denied; its influence reduces character to a single level; through its debasing forces strong men fall, and virtue is murdered.

This most afflicted class of miserable wretches, who by their presence pollute the air, curse society and poison the earth, should share our pity; they are by

birth degenerates and by environment degenerated. Seldom is treatment sought; seldom do such perverts wish to be different; they are happy in the gratification of their foremost desire; they are insane.

Should such a spirit be displayed by a girl or boy, a strict watch should be kept. Such association and life should be had that will strengthen the weakness of character. Should all moral surroundings fail; strip the character of sex by performing double castration in the male and oophrectomy in the female. Such work as this must be proposed and executed through the aid of witnesses, consultation and with the consent of all concerned, otherwise it would be without legal consent. With a knowledge of such a defect, most positively would I recommend and earnestly perform this work. Otherwise the case is to be referred to the Alienist or Neurologist.

#### Neurasthenia Sexualis.

The term neurasthenia implies a debilitated or exhausted condition of the nerves, though modern usage lends it a much broader significance. Sexual neurasthenia might be more aptly put sexual hypochondriasis, for the condition as it usually offers is more strictly of the latter type, though frequently the neurasthenia is responsible for the hypochondria. The condition here treated is to be separated from those posterior neuroses; it is that condition where no cause can be demonstrated.

It matters little which name be given, for under either comes a class of sufferers, the extent of which but few seem to appreciate.

Prior to and immediately following the period of nubility, young men become much concerned about



their sexual appointments; they become possessed of strange and extreme fancies; they devote themselves unduly to the consideration of this part. The exercise of these cerebral areas to the exclusion of others, at first results in over-development or undue acuteness, at the expense of all the others. They grow attentive to all that relates to such matters; they are restrained by the civilizing and refining influence of society and modesty; they bear their real or fancied burdens, looking for relief that does not come; exhaustion of the overtaxed centre results, and they grow despondent; they brood over their misfortunes; their hopes become blighted, and a gloomy picture is spread before them.

Such a patient will be indifferent; he will shun amusement, avoid society and will deny his life all sunshine.

The cause for such a condition comes from the demoralization of his sexual tone, and this through masturbation, lascivious desires, venereal excess and ungratified longings. Occasionally posterior urethral disease and other genital defects are responsible.

Failure to satisfactorily perform copulation, on account of precipitate ejaculation, may begin to worry him, and loss of confidence follows.

#### Diagnosis.

In the absence of any discoverable disease, a patient may be considered a sexual neurasthenic when his delusions are in line with the above.

#### Treatment.

The quack most often has had possession of him, and it is well to hear his story in full; study his weakness and his worth, summon all your tact and resources,



guard yourself against his interrogations, maintain your dignity, be firm, for it is not always the weak-minded and illiterate to be advised. When you have estimated your patient, you are either to treat his delusion, or appeal to his intelligence and manhood. If he be a man of understanding and reason, you may deal plainly with him; make him understand his real condition, prove to him that he is laboring under an exaggerated or erroneous impression, point out his error and you will succeed. He will be a candidate for tonics, sedatives, alteratives, etc., which may be prescribed, which, with a change of scene and association, cheerful surroundings, electricity, baths and frictions, will soon bring about happy ends.

Should he be a mere boy or an uninformed adult, one not capable of interpreting or appreciating the open methods advocated above, it is far more satisfactory to so encourage and impress him little by little, build him up physically, mentally and morally, making the treatment all the while accomplish specific and decided objects, which can always be done by suggestion. Turn his thoughts and attentions in proper channels, suggest a time when he will be well, and subdivide this in a way that certain changes or improvements will occur at certain periods of treatment, and you will never fail, for such sufferers are always impressionable. When you have their confidence you can control almost every thought. Should such a patient apply, I should pursue somewhat this order: First, be sure there is no deep urethral or other disease. This knowledge can only be had from a searching and painstaking examination, including a microscopic and chemic inspection of his urine. Being satisfied with the diagnosis, and after mature deliberation, say that he will be well in

thirty-six and one-half days; impress him with this, and have him understand that it will be impossible for him to do otherwise.

Prescribe for him in a most mysterious way, give him at least two prescriptions, and have the directions so complicated that he will have no time to think of himself. For instance, prescribe RxS. 77 and 78,

## No. 77.

R.—Potass. brom..... $\mathfrak{z}$ ii.  
 Tr. hyoscyam..... } aa  $\mathfrak{z}$ ss.  
 Tr. cann. ind..... }  
 Elix. valerinate am-  
 mon..... $\mathfrak{z}$ iv.  
 M. ft. sol.  
 S.—A teaspoonful in six  
 teaspoonfuls of water three  
 minutes after each odd hour.  
 Put into a blue bottle.

## No. 78.

R.—Fl. ex. sennæ..... } aa  $\mathfrak{z}$ iss.  
 Syr. aurant cort.... }  
 Tr. nux vom..... $\mathfrak{z}$ iss.  
 M.  
 S.—A teaspoonful in nine  
 teaspoonfuls of water twenty-  
 two minutes after 8 a. m.,  
 2 p. m. and 8 p. m. Put into  
 a white bottle.

and direct that he should carry the white bottle in his left pocket for two days and the other in his right, then change; that the medicine from the blue bottle should be taken, a teaspoonful in six teaspoonfuls of water three minutes after the odd hour up to 9 p. m., at which time he should take a glass of milk and retire, when he will be asleep in twenty-one minutes, because  $7 \times 3$  represents the number of teaspoonfuls multiplied by the number of minutes after the odd hour. The second prescription may be used in some such manner. The suggestions should be in line with the action of the remedies. If a cathartic be given at night, the patient should be advised that his bowels will act freely in the morning, etc.

It is the treatment of this class of ills that such brilliant achievements are accorded. Homœopathy, Christian Science, Osteopathy and those forms of treatment that deal with the imagination.



Patients permitted to go unrelieved of such delusions will eventually become ill, and it is not a matter of debate, nor is it derogatory to professional dignity to cure such a defect in this manner. That plan of treatment best suited to the individual should be adopted.

When the patient has been relieved and the terms of treatment fully met, it is important that the patient be advised against doctors, medicine and all matters that relate to such.

I do not know that I have failed to relieve a single case of this kind. I do know that many very miserable individuals have been set right, have married and have continued a happy life.

Thirty days is all the time required. Sexual and urethral hygiene is imperative, recreation, outdoor physical exercise, sponging, regular hours, good food, cheerful surroundings, all promote a favorable influence.

#### The Sexual Impulse.

In the human male, as in all animal life, there is a desire to propagate and to fill the earth with species of its kind, or to continue the race through offspring from generation to generation.

That such desire is displayed by nature for a wise and good purpose, there are abundant reasons for belief. Nature, in her generosity toward man, has placed this desire first; it is above all others; through it the real objects of life come; our greatest joys, satisfaction and success is measured by it; it is the foundation of manhood, individuality and character. All else is secondary and transient, as compared with it.

The history of man, the study of his disposition and desires, from ages past to the present day, is one connected thought in this department; cycles with civilizing



influences have modified his ideas and manners in many important matters, and while he to-day but little resembles his forefathers in many ways, yet the passion of lust burns on with original fervence. Understanding of the sexual impulse is information that many seek; it is knowledge that should be dispensed generously. What constitutes normal sexual desire—how is man to interpret it, or distinguish it from the pseudo desire? How shall he know when it is well to copulate and when it is injurious? It would be a privilege to give extended mention of these views, but space will not permit. I will, however, briefly intimate that the sexual desire in man is governed by as natural laws as are the desires for food, drink, rest, exercise, etc.; that the discharge of the spermatic fluid is as essential as the disposal of the accumulated product of any other materials that are stored away and no longer serve the purposes of the economy; that in the exercise of the genital functions there are natural impulses dictating, as strong as in the other features of physiologic law; that the interval between the acts of copulation are as variable and as well defined as in any other department, and the reason why we are unable to advise specifically is for want of knowledge in this the most important part of our duty. Should a man ask how often he should eat, or should we undertake to advise him in this, we would first make inquiry regarding his gastric condition and his health generally; we would learn the character and volume of his work, his hours of rest and recreation, the climate, clothing and food that is at his disposal, etc. From our understanding of physiology generally and the science of dietetics, we are able to prescribe correctly and have him interpret nature's call for food. Through this knowledge he may be able to distinguish between the natural and the false. The call for food should not be

made through the sight, smell or picture of such, but should come from the digestive apparatus; one whose appetite is created in any other manner will not only fail to gratify nature, but will do himself an injury by obeying an improper dictate. This thought has application to all other purely physiologic or animal demands.

In the brain there is an inhibitory genital center, in the lumbar cord there is a reflex center, and within the confines of the genital region proper there is a local center. The sensation that is dictated by animal need is the sensation or nerve-awakening incident to stimulation when the vesiculæ seminales become filled; the spinal center is then communicated with and the message is forwarded to the head center; if the impulse is genuine, the three act in concert.

When copulation is indulged in under this dictate there is no exhaustion, no depression and no tax upon the vitality.

#### **Sexual Infelicity.**

Much satisfaction comes through the understanding of sexual need with normal gratification, and our greatest disappointments follow abuse or misinterpretation of these appointments; the sorest wounds that afflict society, domestic strife and unhappiness, are measured by such a state. Unfortunate, no doubt, but nevertheless true, that love has its most substantial foundation and constant abiding place in those unions where gender finds mutual content; there is no incompatibility of temperament, no discontent where man and wife have adapted themselves to each other, where each has been reared in strict accord with natural and correct teaching; when they have exhibited through birth and environment a proper evolution and development of moral and sexual strength, here they find their greatest pleasures, each in the other, and in the



affairs of mutual concern. It is here that sexual enjoyment is complete, either receiving that full gratification of nature's wants; it is this that makes a perfect husband and father, attentive to the pleasures, and watchful of the interest of his household; it is this that compensates the wife for the performance of all her functions, contents her with her portion and develops the maternal instinct. Such a state is sexual felicity.

On account of lax or improper training; when physical development has advanced, while moral and sexual nature has gone astray, such characters are restless, mismated and unhappy, and their seed will inherit their defects. Much may be done to make good these differences and bring sunshine into the gloomy household. The sexual organs require civilizing, the nervous system demands regulation, the parts should be examined and all defects cured, as recommended in the several previous chapters.

#### **Precipitate Ejaculation.**

Much complaint is made (especially by young men) on account of precipitate ejaculation. I would be pleased to have it that unmarried men know nothing of ejaculation. At a tender age they, nevertheless, begin the exercise of their genitals, and soon grow to believe that copulation, once or oftener each week, is a part of their existence, and apply for correction of the hurried discharge.

Under existing circumstances their irregularities are most natural. These young men have been masturbators; they have been patrons of vice and immorality in their many forms; they have abused and demoralized their sexual organizations, courted and suffered venereal disease; they have developed a desire for novelties, and now wonder why it is their sexual appointments are not normal. Their association, amusement and life is opposed



to sexual rest and vigor, of which they seem to be ignorant. While I now write, such a case applies. This young man, age twenty-two, presents a history in line with the above. He indulges his sexual appetite three or four times a week, rarely with the same character twice. He is nervous, excitable, intemperate, irregular in his habits. Sexual relations are attended with undue excitement. He has had gonorrhœa four times, and I find his deep urethra extremely tender. I shall endeavor to apply sexual hygiene. I have applied a weak solution of nitrate of silver to his prostatic urethra. I will use a clod sound every third day and endeavor to overcome the hyperæsthesia of this part.

## No. 79.

R.—Sulph. hyocyamine.....gr. i.  
 Camph. mono. brom..... $\bar{3}$ i.  
 Sulph. strych.....gr. i.  
 Aloin .....gr. v.  
 Quininæ sul ..... $\bar{3}$ i.  
 M. ft. pil. No. LX.  
 S. One four times a day.

## No. 80.

R.—Potass. brom..... $\bar{5}$ iv.  
 M. ft. chart No. VI.  
 S. One in a wineglassful  
 of water at bedtime.

I have given him these prescriptions and have shown him the error of his conduct. In brief, this is the treatment for such a state. Arsenauero is an excellent tonic; iron, quinine and strychnine, syr. lactophosphate of lime, may be used with benefit.

## The Methods of the Quack.

The time once was when this form of industry was confined to the large cities, and the number of flagrant mountebanks could be counted upon the fingers. At this time their methods were without system and could be readily comprehended. The perpetrators of such fraud made little pretension in the direction of respectability.

Times have changed. The charlatan of to-day is clearly the Napoleon of fraud. He is found in every sec-

tion of the country, under the mantle of religion, in the garb of a philanthropist, and in the interest of science. His methods are plausible, cunning and far-reaching. He has studied the weakness of human nature and learned its vulnerable point to be through the sexual. He has mastered the science of finance by learning all approaches to the purse and bank account. In a word, he is the shrewdest and most seductive specimen of all impostors. He is worse than a VULTURE, or SHARK. He is, indeed, the human OCTOPUS, for, through his cunning, he winds his tentacles firmly about his trusting victim, fastens his suckers upon his vitals, and begins his slow, unceasing and merciless consumption of his prey.

Within the past six years I have devoted some study to their methods. I have corresponded with almost a hundred, and have personally consulted about a dozen. They secure the names and addresses of all the young men in the land. This is done through agencies that make a business of keeping this directory up to date. They have learned that literature mailed for the first time will bring about eight per cent. of responses; that a different class of literature mailed to the same addresses will develop about five per cent. of replies; the third lot will induce a certain number to make inquiry. A young man, receiving such advertising, may throw it aside without looking it over. In a few weeks he is sent a second supply, that he will read at his leisure through curiosity, and this may, in turn, be thrown away. Soon, a third assortment is at hand that he will read with more interest. This he will carry about him for future reference. He begins to think about what he has read. It has been suggested that he may have masturbated during his early manhood or suffered from nocturnal emissions, that his memory for names and dates may be weakened, that he



may be passing seminal fluid with his stool or with his urine, that there may be aversion to ladies' society, pimples on the face, shortness of breath from violent exercise, palpitation of the heart from running upstairs, a full feeling after a hearty meal, a tired and sleepy sensation in the afternoon, dark or floating spots in the field of vision, a viscid discharge after erection, that the penis may be small, cold and pale, that the scrotum may hang low in warm weather, and much else of this nature.

They will suggest that the urine be passed in a glass and let stand for twenty-four hours. "If there is a deposit it is seminal fluid," and every symptom suggested will appear when the unfortunate finds this (purely normal flocculent deposit). Then it is that the unfortunate fills out the symptom blank and enters negotiations with this wonderful and good man, Dr. Quack. Should he hesitate about the terms, a special reduction is made him, or he is given a free trial outfit. The correspondence that follows is stereotyped and elegant in composition. Several times I have written under three distinct addresses, and described three widely different conditions, and the several responses would be identical.

The daily press, religious publications and periodicals of all kinds, receive their advertisements. The headings are attractive to certain classes. **LOST MANHOOD, PREMATURE DECAY, EARLY OR YOUTHFUL INDISCRETIONS, PREMATURE DISCHARGES, SEMINAL WEAKNESS, etc.,** are headings displayed in bold type.

The words "free" and "guaranteed" are almost invariably parts of such announcements, unsolicited testimonials, especially from the clergy, are conspicuous arguments. Many concerns engaged in this irregular business are incorporated with capital stock reaching the hundred thousands, and with corporate name that implies a state concern. Bank references are freely given.



When a young man becomes delinquent, or should he be slow to advance the price of additional treatment, their letters grow stronger, "imploing the patient to continue treatment before it is too late." They picture the deepest despair awaiting him, and may suggest that delay means insanity. Some even go so far and threaten to advise the parents or guardians of the deplorable condition of the patient, except he continue treatment.

With the average young man it is exceedingly difficult to resist their methods, and when once their victim it is all but impossible to dispose of them. As physicians it is clearly our duty to shield the ignorant, susceptible and weak against the approach of this class. Very much illness, real and fancied, has its origin here, and this subject is given space that the family physician may know the origin of this suffering and meet it with understanding.

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